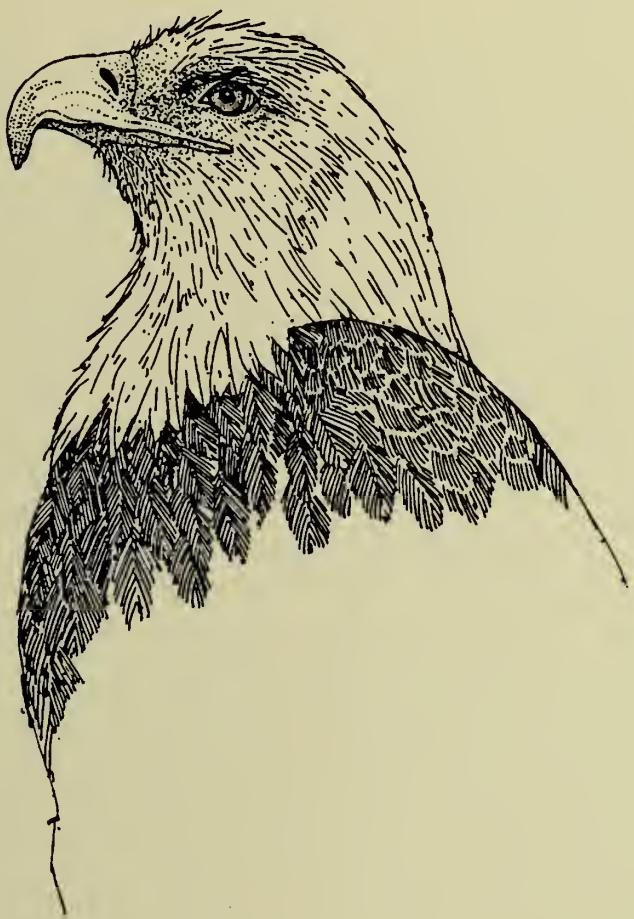


*Jordan Lake  
State Recreation Area*



*General Management Plan*



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**JORDAN LAKE**

**STATE RECREATION AREA**

**GENERAL MANAGEMENT PLAN**

**Department of Environment and Natural Resources**

**Division of Parks and Recreation**

**August 1998**



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# INTRODUCTION

Planning is an essential element of effective and efficient park administration and management. The North Carolina General Assembly acknowledged its importance by passing state parks system legislation that includes planning requirements.

The 1987 State Parks Act (G.S.114-44.7 through 114-44.14) stipulates that a State Parks System Plan be prepared. The plan was completed in December 1988. It evaluated the statewide significance of each park, identified duplications and deficiencies in the system, described the resources of the system, proposed solutions to problems, described anticipated trends, and recommended means and methods to accommodate trends.

The State Parks Act also requires each park to have an individual general management plan. The general management plans are required to:

*...include a statement of purpose for the park based upon its relationship to the System Plan and its classification. An analysis of the major resources and facilities on hand to achieve those purposes shall be completed along with a statement of management direction. The general management plan shall be revised as necessary to comply with the System Plan and to achieve the purpose of the [State Parks Act].*

The general management plan (GMP) is to be a comprehensive five-year plan of management for a park unit. GMP's function to:

1. describe park resources and facilities;
2. state the purpose and importance of each park unit;
3. outline interpretive themes and propose locations for informational and interpretive facilities;
4. analyze park and recreation demands and trends in the park's service area;
5. summarize the primary laws guiding park operations;
6. identify internal and external threats to park natural and cultural resources, and propose appropriate responses;
7. identify and set priorities for capital improvement needs;
8. analyze visitor services and propose efficient, effective, and appropriate means of responding to visitor needs; and
9. review park operations and identify actions to support efficient and effective park administrative procedures.

The GMP for Jordan Lake State Recreation Area, developed with public involvement, is intended to serve these purposes.



# I. DESCRIPTION OF JORDAN LAKE STATE RECREATION AREA

## LOCATION AND ACCESS

Jordan Lake State Recreation Area is located in Chatham County, approximately 21 miles southwest of Raleigh and south of Durham. The lake is bisected by US 64, which runs east-west from Raleigh and Cary to Pittsboro. It is roughly bounded by NC 55 and NC 751 on the east, US 1 to the south, and US 15-501 on the west. Interstate 40 crosses through the northern portion of the project. These major road arteries and a network of secondary roads provide excellent access to the area (Figure I-1).

## LAND AND WATER AREA

The B. Everett Jordan Dam and Lake project encompasses 46,768 federally owned acres located near the eastern edge of a region of rolling hills known as the Piedmont plateau. Almost all of the project acreage is leased to the state. The leased acreage is managed by three state agencies: the Wildlife Resources Commission, the Division of Forest Resources, and the Division of Parks and Recreation (DPR). DPR manages approximately 3,916 acres of land at nine sites located along the shore of the 13,900-acre lake. These sites comprise the state recreation area and provide public access to the lake for water-based recreational activities.

Approximately 150 miles of shoreline are created by the lake at a water level of 216 feet above mean sea level. The lake's shoreline is characterized by gentle hills and forested areas of second growth pine and hardwoods. The impounded waters are part of the Haw River sub-basin of the Cape Fear River basin. The drainage area above the dam covers a 1,690 square mile drainage area. Lake waters extend five miles up the Haw River, a swiftly moving river having a narrow valley and a steep stream gradient, and 17 miles up the New Hope River, a slow-moving river with a wider flood plain and gentle stream gradient.

When the lake was filled in 1981, the project area and its surroundings were generally rural in character. Today the lake is surrounded by the major urban areas of Raleigh and Cary to the east and Durham and Chapel Hill to the north. These urban areas are steadily growing towards the lake, and this growth is increasingly changing the area's rural character. Many subdivisions have been or are being constructed near the lake, and commercial development continues as well.

Seven registered natural areas, ranging in size from 58 to 693 acres, are located on project lands managed by the N.C. Wildlife Resources Commission, the Division of Forest Resources, the UNC-Chapel Hill Botanical Garden, and the Corps of Engineers. Total acreage of the seven natural areas is 1,675. These areas are representative Piedmont habitats and include a wide variety of Piedmont natural communities, from bottomland wetland forests to upland hardwood and pine forests. Due to the proximity of these areas to nearby urban centers and educational institutions, they are important resources for environmental education.

Figure I-1. Jordan Lake State Recreation Area

Facility Legend	Facilities Available											
	① A New Hope Overlook	② A Ebenezer	③ A Poplar Point	④ A Robeson Creek Campground	⑤ A Crownards Point	⑥ A Seaforth	⑦ A Party Creek	⑧ A Vista Point	⑨ B Cambridge Marina	⑩ B Cambridge Marina	⑪ C Point's Ridge	⑫ D Point's Ridge
Boat Ramp	●	●	●	●	●	●	●	●	●	●	●	●
Boat Rentals												
Camping - Group	●											
Camping - Tent		●										
Camping - RV			●									
Dump Station				●								
Fishing	●				●							
Hot Water Showers						●						
Parking	●						●					
Picnic								●				
Public Telephone									●			
Restrooms										●		
Swimming											●	
Trails												●

1 FOR CAMPERS ONLY    A PARKS AND RECREATION    C NC WILDLIFE RESOURCES COMMISSION  
2 24 HOUR ACCESS    B CONCESSIONAIRE    D U.S. ARMY CORPS OF ENGINEERS



0 1  
2.3 MILES

Map legend

- H Hospital
- EMERGENCY Dial 911
- ▲ Navigational Buoy
- N.C. Forest Resources
- Park Office
- Paved Roads
- Reservoir
- ▨ New Hope Camelands
- Non-Camelands

## VISITOR FACILITIES

The Division of Parks and Recreation provides a variety of areas and facilities at its nine sites. These include boat ramps, group camping, tent and trailer camping, recreational vehicle camping, fishing, showers and restrooms, picnicking, swimming, and trails (Figure I-1).

Water sports and camping are the focus of the recreation area. Fishing is a popular sport on the lake, and tournaments held throughout the year attract many fishermen. Bass, crappie, catfish, and pan fish are plentiful. Underwater stumps, logs, and rocks help create a good fish environment.

Boating and skiing are popular during the spring and summer months. Each of the recreation areas has boat launching ramps that provide easy access to the water. Open expanses of water make the lake a popular place for sailing and windsurfing. The most popular center for sailing is Vista Point, while Ebenezer Church is frequented by windsurfers. A privately operated concession, Crosswinds Marina, is operated for the convenience of park visitors. The marina offers boat launching, slips and mooring, equipment rentals, service and supplies.

Ebenezer Church, Seaforth and Parkers Creek offer sandy swim beaches. These popular areas are host to a flurry of activity during the warm weather months. These swim areas and Vista Point also have picnicking facilities available. Picturesque picnic sites have tables, grills, and trash containers with drinking water located nearby. Each of these areas also has picnic shelters. Shelters are different sizes, so large or small groups can be accommodated.

Jordan Lake State Recreation Area is one of the state's most popular camping areas. Parkers Creek, Vista Point, Poplar Point, and Crosswinds Campground have over 1,000 family campsites, many near the lake shore. These sites offer water and electric hookups, picnic tables, grills and trash containers. Showers and restrooms are located near by. Vista Point has 55 recreational vehicle camping sites, and New Hope Overlook offers primitive hike-in campsites. Toilets and water are available at central locations in this area. Parkers Creek and Vista Point offer areas for group camping. The group camps provide drinking water and restrooms.

### Entrance Fees and Hours of Operation

Entrance fees of \$4.00 per car and \$10.00 per bus are charged in each of the recreation areas. Separate fees are charged for shelter rentals and camping. These fees supplement operational costs and help maintain and improve the recreation areas.

The hours of operation are as follows:

November - February	8 a.m. to 6 p.m.
March and October	8 a.m. to 7 p.m.
April and September	8 a.m. to 8 p.m.
May - August	8 a.m. to 9 p.m.

## HISTORY OF THE PARK AREA

The New Hope River Valley was included in the Granville Grant and was first settled by Scottish Highlanders in the 1740s. Early economic pursuits of these settlers were primarily agricultural. Cultivated crops included corn, tobacco, potatoes, peas, and beans. Domesticated hogs and cattle were also raised. Later, the New Hope River Valley was the scene of several Revolutionary War skirmishes.

The population continued to be overwhelmingly rural, and farming activities continued to thrive up until the Civil War period. During this conflict, normal farming activities were greatly curtailed, since many local farmers enlisted in the Confederate cause. Following the Civil War, farming activities resumed. Cotton had become the most important crop, with tobacco second. By the 1920s, local lumber mills had clear-cut most of the existing forests, and attention was turned to dairy farming and poultry production.

Following a disastrous hurricane and flooding that struck the Cape Fear River Basin in 1945, Congress directed the U.S. Army Corps of Engineers to undertake a comprehensive study of water resource needs in the area. The project, then known as New Hope Lake, was authorized in 1963 to provide for flood control, water supply, water quality control, recreation, and fish and wildlife conservation. In 1973, the project name was changed to B. Everett Jordan Dam and Lake in honor of the former senator from North Carolina.

Before construction could start, land acquisition was necessary. Approximately 1,072 separate land tracts comprising 46,768 acres were acquired. The majority of these land tracts were managed as small farms and homesteads. Farming, particularly in the northern end of the project area, was declining, and the rural landscape was already being pressured by the growing areas of Raleigh, Cary, Durham, and Chapel Hill.

With construction and legal problems resolved, the lake was filled in 1981. In October of 1981, the federal government entered into a 50-year lease with the state of North Carolina for almost all of the project area, 45,478 acres of land and water. Under the lease agreement, the state will manage the land and water for public park, recreational, fish, wildlife, and other natural resources management purposes, with the Corps of Engineers assisting as necessary. The federal government agreed to fund 100 percent of costs for initial master plan development, and the state agreed to assume all costs of operation, maintenance, and replacement of recreational facilities.

In keeping with these multiple purposes, the leased acreage is divided and is managed by three state agencies: the Wildlife Resources Commission, the Division of Forest Resources, and the Division of Parks and Recreation.

The Wildlife Resources Commission (WRC) manages permanent wildlife lands primarily for wildlife and low-density recreation, such as hunting and wildlife observation. These game lands are identified by boundary signs and other markings. The WRC also manages interim game lands. These interim-use lands will be managed as wildlife lands until they are developed for recreation. A 24-month notice on or before June 30 is necessary prior to transfer of control on interim lands.

Once developed for recreation, these lands will be managed by the Division of Parks and Recreation or by a local government.

The Division of Forest Resources manages Educational State Forest lands to provide an educational opportunity for school groups and the general public. The division seeks to make people more aware of the natural resources of the area and the impact of uses on these resources.

Recreation lands are managed primarily for high and low density recreation, but with hunting excluded. The Division of Parks and Recreation is the primary managing agency.

Development of the Jordan Lake State Recreation Area is still evolving. The recreation areas and the 13,900-acre lake have boomed in popularity. New areas have continued to be constructed (Table I-1), and today the area is recognized as a major statewide recreational resource.

**Table I-1. Construction of Jordan Lake State Recreation Area Sites**

Site	Construction Completed	Cost
Crosswinds Marina	1980	\$ 2,716,000
Crosswinds Boat Ramp	1989	
Vista Point	1985	\$ 1,754,000
Parkers Creek	1985	\$ 6,844,000
Ebenezer Church	1989	\$ 3,887,000
Seaforth	1989	\$ 2,629,000
Poplar Point	1989	\$13,099,000
Crosswinds Campground	1991	\$ 4,477,000
New Hope Overlook	1993	\$ 3,652,000
Robeson Creek	1993	\$ 1,142,000



## **II. PARK PURPOSES**

### **MISSION STATEMENT FOR THE STATE PARKS SYSTEM**

*The North Carolina state parks system exists for the enjoyment, education, health, and inspiration of all our citizens and visitors. The mission of the state parks system is to conserve and protect representative examples of the natural beauty, ecological features, and recreation resources of statewide significance; to provide outdoor recreation opportunities in a safe and healthy environment; and to provide education opportunities that promote stewardship of the state's natural heritage.*

### **JORDAN LAKE STATE RECREATION AREA PURPOSE STATEMENT**

**F**ollowing a disastrous hurricane that struck the Cape Fear River Basin in 1945, Congress directed the U.S. Army Corps of Engineers to undertake a comprehensive study of water resource needs in the area. The concomitant New Hope Reservoir project (later renamed B. Everett Jordan Dam and Lake) was authorized by Congress in 1963 to provide for flood control, water supply, water quality control, recreation, and fish and wildlife conservation. Land acquisition and development began in 1967, but legal and construction problems delayed initial filling of the lake until late 1981.

In October of 1981, the state entered into a 50-year lease of approximately 45,478 acres of land and water for public park, recreational, fish, wildlife, and other natural resources management purposes. In keeping with these multiple purposes, the leased acreage is allocated for management to the North Carolina Division of Parks and Recreation, the Division of Forest Resources, and the Wildlife Resources Commission. The federal government agreed to fund 100 percent of costs for initial master plan development, and the state agreed to assume all costs of operation, maintenance, and replacement of recreational facilities.

The 13,900-acre Jordan Lake is a major statewide recreational resource. Nine major sites comprise the Jordan Lake State Recreation Area and provide public access to the lake for water-based recreational activities. A variety of recreational facilities encourage use of the lake and provide opportunities for resource-compatible recreational activities such as fishing, swimming, sunbathing, motor boating, waterskiing, wind surfing, sailing, picnicking, hiking, and natural and cultural resource interpretation. Tent and trailer, group, primitive, and recreational vehicle camping offer a variety of overnight recreational opportunities. A private concession marina operates for the convenience of park visitors and offers boat launching, slips and mooring, equipment rentals, service, and supplies.

Jordan Lake State Recreation Area affords outstanding scenic vistas of the lake and its shoreline. Unlike many earlier Corps of Engineers projects, all of the approximately 150 miles of shoreline

of Jordan Lake is protected by public ownership. Scenic stream openings, beaches, bluffs, and rock outcrops punctuate the rolling topography of the forested lake shore. The diverse topography creates scenic views of open water, narrow curving channels, coves, and long finger-like inlets. Jordan Lake and its surrounding lands provide a large, undeveloped, open space that contrasts with rapidly expanding urbanization nearby.

Jordan Lake and its surrounding public lands serve to protect exceptional aquatic and terrestrial habitats and provide excellent opportunities for biological resource interpretation. The lake is a major oasis for wintering water birds and a stopover site for numerous migrating species. Our national symbol, the American Bald Eagle, nests here as do a myriad of songbirds, shorebirds, and raptors. The project lands serve as important wildlife corridors. Natural areas associated with the Jordan lake project are representative Piedmont habitats that include a wide variety of Piedmont natural communities, from bottom land wetland forests to upland hardwood and pine forests.

The Jordan Lake project contains good archaeological and cultural resources. Many Native American sites have been identified as well as representative period structures and cemeteries. Four sites, including an archaic prehistoric archaeological site, a late woodland prehistoric site, a 19th century farm complex, and a 19th century rural community, have been placed on the National Register of Historic Places.

The majority of Jordan Lake lies within the western margin of the Durham Triassic Basin, formed by a down faulting of relatively recent age sedimentary formations into much older igneous formations, both of which were then subjected to erosion. This fault generally runs north-south along the western portion of the project. The lake area is underlaid predominately by Upper Triassic Age formations of reddish-brown conglomerates and red-to-purple sandstones. These rock formations are fractured by many joints, faults, and diabase dikes. A few small portions of the lake extend into the older crystalline igneous rock. These areas are underlaid by rock of the Carolina Slate Belt Series, Pre-Cambrian or Lower Paleozoic Period.

Jordan Lake State Recreation Area exists primarily because of its outstanding recreational and scenic values and also for its biological, archaeological and geological significance. The Division is charged with preserving these and other values and providing park experiences that promote pride in and understanding of North Carolina's natural heritage.

### **III. SUMMARY OF INTERPRETIVE THEMES**

The 1987 State Parks Act defines the purposes of the state parks system. It establishes that:

*The State of North Carolina offers unique archaeologic, geologic, biologic, scenic and recreational resources. These resources are part of the heritage of the people of this State. The heritage of a people should be preserved and managed by those people for their use and for the use of their visitors and descendants.*

It further provides that:

*Park lands are to be used by the people of this State and their visitors in order to promote understanding of and pride in the natural heritage of this State.*

One of the best methods of meeting these purposes is through environmental education. The Department of Environment, Health, and Natural Resources has adopted the following definition of environmental education:

*Environmental education is a process that increases awareness, knowledge, and understanding of natural systems -- the interdependence of living things, the impact of human activities -- and results in informed decisions, responsible behavior, and constructive action.*

According to the State plan, environmental education activities should include humans and their interactions with natural systems as part of the exercise, not taught as separate components. The story of the bald eagle at Jordan Lake provides a vehicle for all visitors to understand and participate in an environmental education message. Now the largest summertime home of the bald eagle in the eastern United States, Jordan Lake attracts many visitors hoping to view this magnificent bird. The eagle also helps the staff to interpret the three primary themes and seven secondary themes for this recreation area. Primary themes include predator-prey relationships, aquatic resources, and cultural resources of the Jordan Lake watershed.

#### **PRIMARY INTERPRETIVE THEMES**

##### **Predator - Prey**

In addition to predator-prey relationships, this theme includes related ecological concepts such as food chain, food web, habitat, adaptation, and resource management. Most visitors explore predator-prey relationships through interpretive talks and nature hikes that focus on the bald eagle and other area wildlife, both terrestrial and aquatic. Elementary students participate in activities from the EELE (Environmental Education Learning Experience), *Predators and Prey*, which

emphasizes the bald eagle and its prey. In both the EELE and interpretive programs, human impacts on food chains and animal habitats are discussed and stewardship is encouraged.

### **Aquatic Resources**

Programs in this theme area focus on aquatic life in the Jordan Lake watershed. The popular C.A.S.T. (Catch, A Sure Thing) program introduces children to fish biology, fish identification, fishing techniques, and outdoor ethics. Fishing programs for older visitors include information on how fish are managed in the reservoir. Other aquatic programs such as "Pond Life" give visitors a hands-on experience with the aquatic life in one of the ponds in the park.

### **Cultural Resources**

This theme highlights the past human history of the New Hope River Valley. Archaeologists have explored the remains of 450 prehistoric and historic sites in the area and have uncovered many Indian artifacts. Scottish Highlanders settled the area in the 1740s. Interpretive programs illustrate how various cultures used the natural resources of the upper Cape Fear River Basin.

## **SECONDARY INTERPRETIVE THEMES**

Secondary themes for the park support and embellish the primary themes, and are listed below.

- Astronomy and other night programs
- Area wildlife (raptors, deer, beaver, reptiles and amphibians, bugs and spiders)
- Wildflowers -- local species
- Living history
- Career planning -- life of a park ranger and other outdoor-related work
- History of the Army Corps of Engineers' project to create Jordan Lake
- Water Safety

## **IV. PARK AND RECREATION DEMAND AND TRENDS**

### **ANNUAL VISITATION TRENDS**

As shown in Figure IV-1, annual visitation at Jordan Lake State Recreation Area has grown substantially since 1986. While visitation increased at a 7.43 percent compounded annual rate during these years, visitation on a year-to-year basis is somewhat unpredictable. A year in which popular holiday weekends have bad weather can cause visitors to stay home, resulting in lower visitation totals. Other factors, such as the opening of new facilities and the closing of older ones for repair, also affect visitation. Ebenezer Church, Poplar Point, and Seaforth were completed in 1989 and Crosswinds in 1991. In 1989, the main beach at Ebenezer Church was closed for 18 months; in 1996, flooding the week of July 4 hurt attendance; and Hurricane Fran damage caused the park to be closed during the fall of 1996.

Even with the addition of new facilities, Jordan Lake is now often crowded on holiday and summer weekends. With robust population growth of the Research Triangle area expected to continue, Jordan Lake's visitation growth can also be expected to continue.

Visitation is taken by vehicle traffic counters, and a multiplier of four persons per vehicle is used. All the day-use areas have traffic counters, but not all of the camping areas do. Therefore, not all persons that camp at Jordan Lake are included in these visitation totals.

### **MONTHLY VISITATION TRENDS**

Monthly visitation at Jordan Lake averaged for the four years from May 1992 through April 1996 follows a pattern typical of most state park units (Figure IV-2). In the winter, cold weather keeps visitation down. With warmer weather, visitation increases and then drops significantly in August as the school year resumes. Visitation is highest in July, the wettest and hottest month of the year, with a mean temperature of 75.7 degrees Fahrenheit. Seventy-nine percent of annual visitation takes place in the warmest six months from April through September.

This monthly visitation pattern suggests that part-time and seasonal personnel should continue to be used in the busier April-through-September period. Permanent staff also need to be available to serve visitors during this period. Where possible, work scheduling should be undertaken with this in mind.

Annual Visitation Trends - Jordan Lake  
1986 - 1997

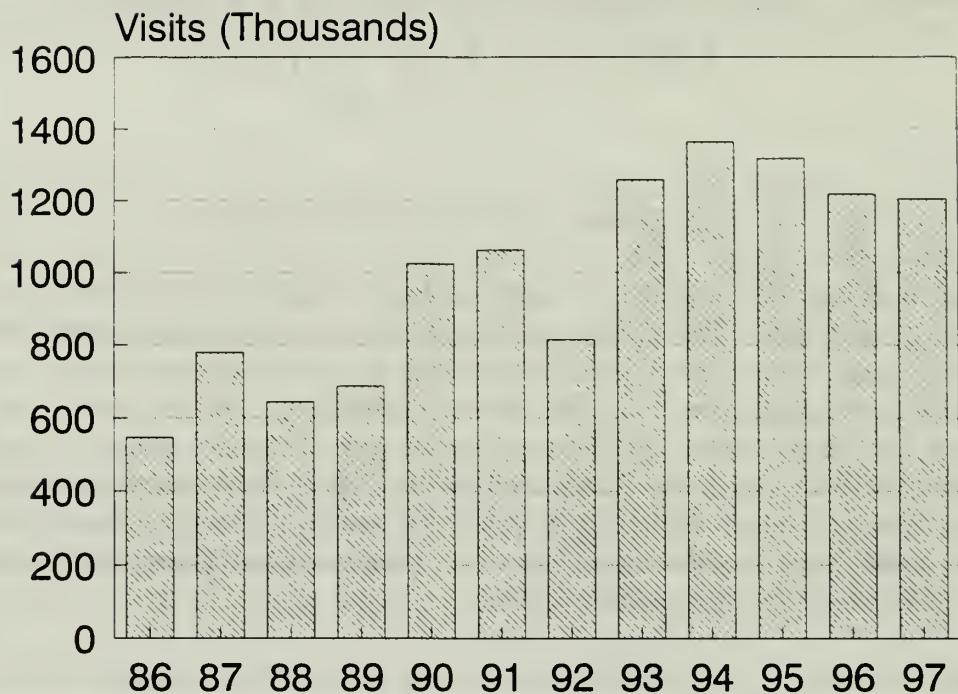


Figure IV-1. Annual Visitation

Monthly Visitation (Avg'd) - Jordan Lake  
5/92 - 4/96

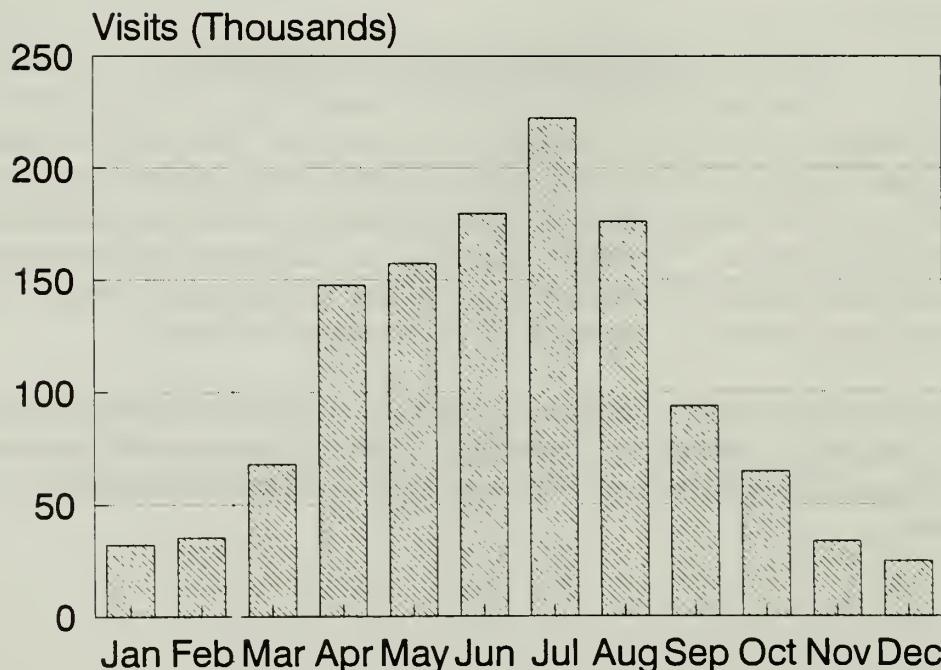


Figure IV-2. Average Monthly Visitation

# JORDAN LAKE CAMPING TRENDS

1990-1997

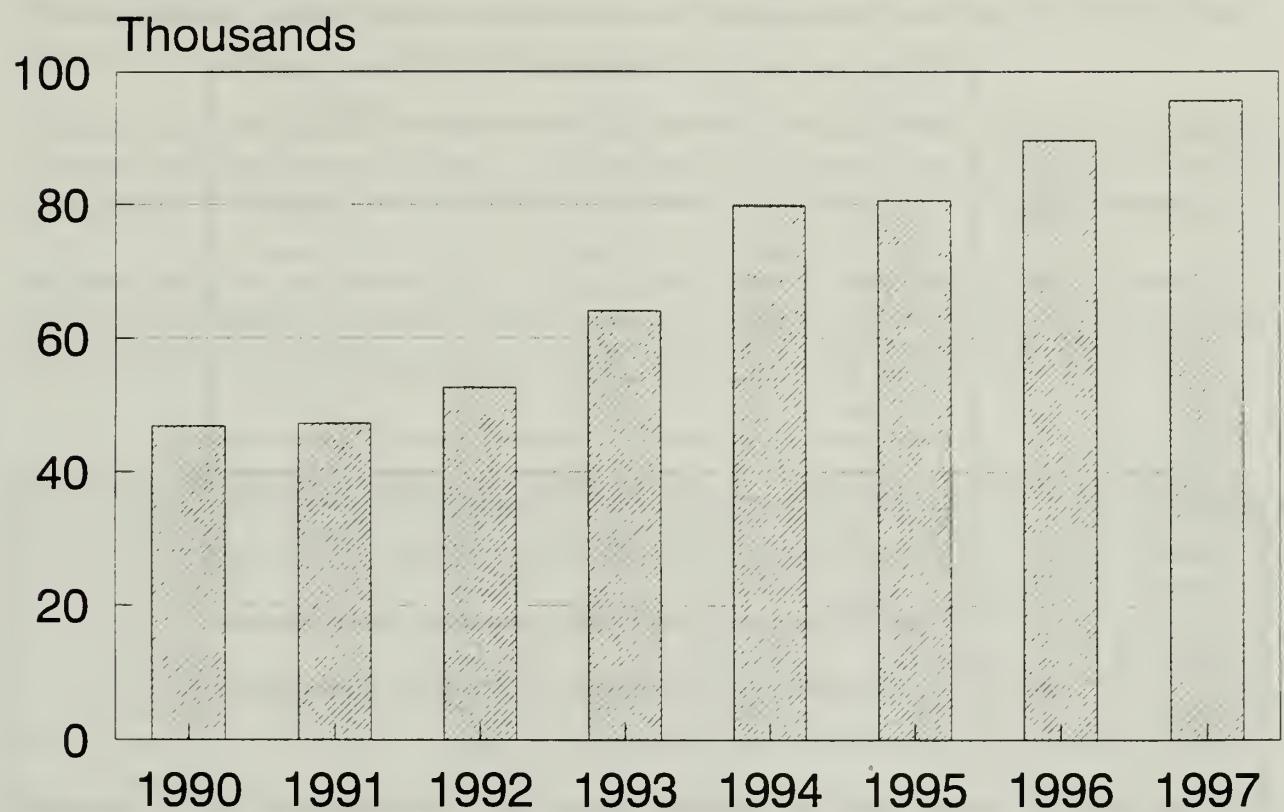


Figure IV-3. Jordan Lake Camping Trends

## CAMPING TRENDS

Figure IV-3 shows how camping at Jordan Lake has grown in popularity from 1990 through 1995. In addition to the tent and trailer camping totals shown, Jordan also has group camping and primitive camping. These other types of camping have also shown large jumps in popularity. Table IV-1 shows the annual camping totals available for group and primitive camping.

YEAR	GROUP	PRIMITIVE
1990	3,701	NA
1994	3,605	NA
1992	6,595	NA
1993	7,840	NA
1994	10,584	226
1995	12,472	535
1996	6,092	185
1997	10,761	334

**Table IV-1. Annual Group Camping & Primitive Camping Days**

Camping at Jordan mirrors general visitation patterns. Little camping takes place in the winter. In March, it picks up, and from April through September, camping use is heavy. It then drops off with the advent of colder fall and winter weather.

## DEMOGRAPHIC TRENDS

The primary service area for Jordan Lake State Recreation Area includes Chatham County, in which the park is situated, and the surrounding counties, particularly Wake, Durham, and Orange counties. The area, known as the Research Triangle Region, is anchored by world-class universities, medical centers, state government, and firms in leading technological and medical fields. Its diverse economy has proven more stable than those in other regions of the state and nation. The region's combination of economic vitality, educational opportunity, mild climate, and general quality of life caused it to be lauded as "The Best Place to Live in America" by *Money* magazine in 1994 and as "The Best City for Business" by *Fortune* magazine in 1993.

Unlike many metropolitan areas, the region is not dependent upon one central city. Approximately 9 percent of the area's residents live in Raleigh, the largest Research Triangle city. Four cities, many smaller towns, and numerous rural communities comprise the large regional community. In 1990, over 145,000 residents crossed a county line to get to work, reflecting a sense of larger regional community. This sense of regional community is enhanced by the Raleigh-Durham

International Airport, the Research Triangle Park in Durham and Wake counties, and by Jordan Lake and Falls Lake — the area's large recreation and water-supply lakes that extend across several counties.

Service is the leading industry sector in the area, accounting for over 29 percent of jobs. Raleigh is the state capital, so government employment is a higher-than-usual 25 percent. Trade is also 25 percent of employment, while manufacturing accounts for 19 percent.

The area's economic success is reflected in incomes. The estimated 1995 median family income in the region is \$34,563. The metro area's estimated 1995 median family income of \$46,800 surpasses the next highest North Carolina metro area — Charlotte — by \$5,100 or 12 percent.

The many resources and advantages of living in the Research Triangle Region have resulted in robust population growth, a trend that is expected to continue. Table IV-2 shows the Research Triangle Region's population growth and projected growth from 1980 through 2010.

**Table IV-2. Research Triangle Population Growth & Projected Growth 1980 - 2010\***

COUNTY	1980	1990	2000	2010
Chatham	33,415	38,759	45,250	49,105
Durham	152,235	181,854	209,042	241,554
Franklin	30,055	36,414	44,799	51,555
Granville	34,043	38,341	43,329	47,535
Harnett	59,570	67,833	81,456	89,627
Johnston	70,599	81,306	100,827	111,923
Lee	36,718	41,370	47,969	51,365
Moore	50,505	59,000	70,360	75,275
Orange	77,055	93,851	115,066	131,747
Person	29,164	30,180	32,575	33,031
Vance	36,748	38,892	41,287	43,521
Wake	301,429	426,301	578,491	705,271
Warren	16,232	17,265	18,418	18,651
TOTAL:	927,768	1,151,366	1,428,869	1,650,160

\* Source: LINC System, N.C. State Data Center

From 1980 to 2000, the area's population has grown at a compounded annual rate of 2.18 percent. This rate of growth is projected to slow from 2000 to 2010 to approximately 1.45 percent annually. This annual growth is still considered rapid, however, and it will result in another 221,291 persons living in the area in 2010 than in 2000, an increase of over 15 percent.

According to the Office of State Budget and Management, outside of catastrophic events such as a depression or outbreak of a rapidly spreading, incapacitating disease, the most influential forces affecting the need for state services are the growth and shifts in population. As the region's population grows, more demand can be anticipated for outdoor recreation areas and facilities simply because there will be more people seeking recreational opportunities. Without an increase in recreational areas and facilities, existing ones can be expected to become increasingly crowded.

Because of the economy and general attractiveness of the region as a place to live, in-migration has played a significant role in the region's population growth. Table IV-3 shows migration into the Research Triangle Region from 1980-1990. In-migration accounted for 70.56 percent of the region's population growth during this period and has been the chief source of population growth for most of the counties in the region. This trend is expected to continue.

**Table IV-3. Migration into the Research Triangle Region 1980 - 1990\***

County	1980 Population	1990 Population	Population Increase 1980-1990	Births	Deaths	Net In-migration	% Pop. Increase Due to In-migration
Chatham	33,415	38,759	5,344	5,180	3,180	3,344	62.57%
Durham	152,235	181,835	29,600	24,183	13,771	19,188	64.82%
Franklin	30,055	36,414	6,359	4,281	3,205	5,283	83.08%
Granville	34,043	38,345	4,302	4,762	3,672	3,212	74.66%
Harnett	59,570	67,822	8,252	10,686	5,677	3,243	39.30%
Johnston	70,599	81,306	10,707	10,502	7,193	7,398	69.09%
Lee	36,718	41,374	4,656	6,098	3,598	2,156	46.31%
Moore	50,505	59,013	8,508	7,259	5,950	7,199	84.61%
Orange	77,055	93,851	16,796	10,019	4,848	11,625	69.21%
Person	29,164	30,180	1,016	3,825	2,749	(60)	-5.91%
Vance	36,718	38,892	2,144	5,854	4,110	400	18.66%
Wake	301,429	423,380	121,951	51,198	21,256	92,009	75.45%
Warren	16,232	17,265	1,033	2,344	2,019	708	68.54%
RT Region	927,768	1,148,436	220,668	146,191	81,228	155,705	70.56%

\* Source: U.S. Census

The Research Triangle region has a relatively diverse, young, and highly educated population (Figures IV-4 and IV-5). Highly educated people tend to participate more frequently in outdoor recreation. Twenty-seven percent of the population 25 or older in 1990 had a bachelor's degree or higher, and 12 of every 1,000 adults 25 or older had a Ph.D. The area has three major research universities — Duke, UNC at Chapel Hill, and N.C. State University — and nine other colleges and universities with enrollments of almost 79,000.

## VISITOR INFORMATION

In 1987 the U.S.D.A. Forest Service was contracted by the Department to conduct a Park Areas Recreation Visitors Survey (PARVS) for the North Carolina state parks system, designed to identify visitor socio-economic characteristics and economic contribution to the state's economy. While Jordan Lake State Recreation Area was not one of the eight parks involved in the survey, general information concerning state park visitors is useful in assessing visitation trends at the park.

Why do people visit state park units? The convenient location was cited by 31 percent of the respondents; 25 percent thought other areas were too crowded; 21 percent liked the quality facilities; 8 percent wanted to try a new area; 7 percent enjoyed the scenic beauty; and 6 percent came to see the attraction.

More than one third of state park visitors come from within a 30-mile radius (37 percent), while 17 percent come from 30 to 60 miles away. Survey respondents indicated that the parks were their sole destination 86 percent of the time. While many visitors come from nearby, the average one-way distance travelled was 139 miles. Approximately 25 percent of state park visitors come from out of state. These visitors averaged 4.1 trips per year to North Carolina state parks.

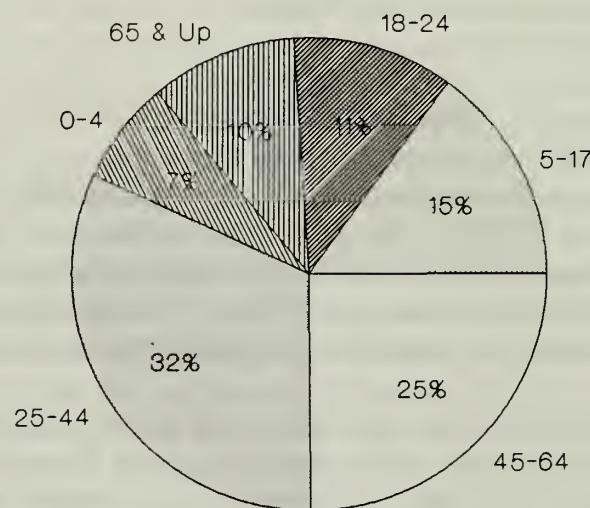
Seventy-eight percent of those surveyed indicated that they were return visitors. The average number of return trips per year was six. Sixty-one percent of visitors statewide came with family members, 16 percent with friends, and 7 percent with both family and friends. Ten percent of visitors came alone. Visitors also came in small numbers in organized groups and multiple families. The average group size surveyed was 3.59.

PARVS data indicates that 16.8 percent of groups surveyed used more than one car, and that the average number of persons per car was 3.05. The average age of the park visitor was 38.24 years. The age distribution was as follows:

Table IV-4. Percent of Visitors by Age Group

<u>Under 6</u>	<u>6-12</u>	<u>13-18</u>	<u>19-25</u>	<u>26-35</u>	<u>36-45</u>	<u>46-55</u>	<u>56-65</u>	<u>Over 65</u>
6.7	11.6	10.6	12.5	20.1	16.9	0.9	7.3	4.4

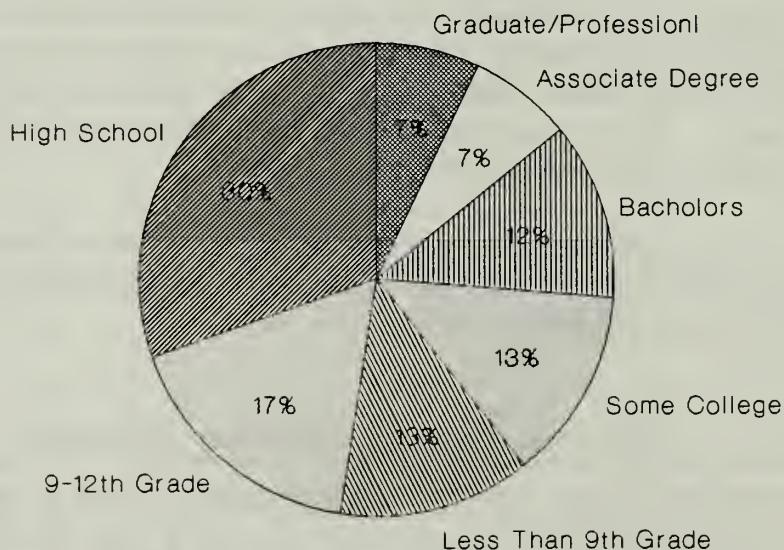
## 1990 POPULATION BY AGE RANGE RESEARCH TRIANGLE REGION



Source: 1990 US Census

Figure IV-4. Population By Age Range

## EDUCATIONAL ATTAINMENT RESEARCH TRIANGLE REGION



Source: 1990 US Census (Age 25 & Older)

Figure IV-5. Educational Attainment

Since over 18 percent of visitors are under the age of 13, a demand exists for children's programs and facilities. Facilities such as expanded campgrounds, beaches, and picnic areas would help meet such needs. Approximately 12 percent of visitors are 56 and older. This older segment of the general population will be increasing, and as it does, demand for improved quality, accessibility, and safety should increase.

## **OUTDOOR RECREATION PARTICIPATION IN NORTH CAROLINA**

The five most popular outdoor recreation activities in North Carolina are walking for pleasure, driving for pleasure, viewing scenery, participating in beach activities, and visiting historical sites. Three out of every four households participated in walking for pleasure at least once in the past 12 months (Table IV-5). In addition to the five most popular activities, over fifty percent of the households responding to a 1989 survey participated at least once in the following activities: swimming (in lakes, rivers, or oceans), visiting natural areas, picnicking, attending sports events, visiting zoos, and freshwater fishing.

The North Carolina Outdoor Recreation Participation Survey was mailed to 3,100 randomly selected residents in the spring of 1989. Forty-five percent, or 1,399 people, returned completed surveys. Each person receiving the survey was asked to estimate the number of times the members of his household had participated in each of 43 activities. The survey results provide good insight into the current participation of North Carolinians in a wide range of outdoor recreation activities.

## **PRIORITIES OF PUBLIC OUTDOOR RECREATION FUNDING**

The North Carolina Outdoor Recreation Survey asked residents a series of questions in order to identify and rank order future demand for various types of public outdoor recreation activities. Future demand was determined by asking them which activities they would have tried more often had adequate facilities been available. Respondents were then asked to rank these activities in order of importance. A scoring system was used assigning each activity a rating of high, moderate or low future demand based on the survey results.

In the second part of the analysis, the respondents' level of support for publicly funded outdoor recreation activities was determined by asking them to identify and rank those activities to which government should give highest priority when spending public money. The same scoring system used to analyze unmet demand was then applied to the survey results, with each activity receiving a high, moderate or low rating in public support for public funding.

In the final part of the needs analysis, the two ratings for each activity were combined to produce a score from one to nine that reflected both future demand and public funding priorities. The activities that ranked high in both future demand and support for public funding received the highest priority in the needs assessment. Support for public funding was given higher priority than expressed demand (Table IV-6).

**Table IV-5. Outdoor Recreation Activities Ranked by Popularity.**

RANK	ACTIVITY	PERCENTAGE OF HOUSEHOLDS PARTICIPATING
1.	Walking for Pleasure	75%
2.	Driving for Pleasure	72
3.	Viewing Scenery	71
4.	Beach Activities	69
5.	Visiting Historical Sites	62
6.	Swimming (in Lakes, Rivers, and Oceans)	54
7.	Visiting Natural Areas	53
8.	Picnicking	52
9.	Attending Sports Events	52
10.	Visiting Zoos	51
11.	Fishing - Freshwater	50
12.	Use of Open Areas	41
13.	Swimming (in Pools)	40
14.	Fishing - Saltwater	38
15.	Attending Outdoor Cultural Events	35
16.	Bicycling for Pleasure	32
17.	Other Winter Sports	31
18.	Camping, Tent or Vehicle	29
19.	Softball and Baseball	28
20.	Hunting	28
21.	Use of Play Equipment	28
22.	Power Boating	26
23.	Trail Hiking	26
24.	Jogging or Running	24
25.	Basketball	24
26.	Nature Study	22
27.	Golf	22
28.	Target Shooting	20
29.	Water Skiing	19
30.	Camping, Primitive	14
31.	Tennis	14
32.	Use Motorcycles, Dirt Bikes, ATV's	13
33.	Use Four Wheel Drive Vehicles	13
34.	Canoeing and Kayaking	13
35.	Horseback Riding	12
36.	Volleyball	12
37.	Downhill Skiing	12
38.	Football	11
39.	Soccer	7
40.	Sailboating	7
41.	Skateboarding	6
42.	Cross Country Skiing	2
43.	Windsurfing	1

**Table IV-6. Priorities for Future Outdoor Recreation Activities**

ACTIVITY	CODE	FUTURE DEMAND	SUPPORT FOR PUBLIC FUNDING
Walking for Pleasure	1	High	High
Camping, Tent or Vehicle	1	High	High
Picnicking	1	High	High
Beach Activities	1	High	High
Fishing - Freshwater	1	High	High
Attend Outdoor Cultural Events	1	High	High
Visiting Natural Areas	2	Moderate	High
Use of Play Equipment	2	Moderate	High
Visiting Zoos	2	Moderate	High
Visiting Historical Sites	2	Moderate	High
Bicycling for Pleasure	3	High	Moderate
Swimming (in Pools)	3	High	Moderate
Viewing Scenery	4	Moderate	Moderate
Hunting	4	Moderate	Moderate
Trail Hiking	4	Moderate	Moderate
Use of Open Areas	4	Moderate	Moderate
Target Shooting	4	Moderate	Moderate
Swimming (Lakes, Rivers, Ocean)	4	Moderate	Moderate
Fishing - Saltwater	4	Moderate	Moderate

## **AREA OUTDOOR RECREATIONAL OPPORTUNITIES**

The Research Triangle region is home to a variety of outdoor recreation areas. A brief description of some of these follows.

### **Haw River (Chatham and Alamance Counties)**

The Haw River is the most popular canoeing river in the Piedmont because of its white water. There are miles of Class 2 rapids and, occasionally, more difficult rapids. The sections of the river through Chatham County to Jordan Lake are particularly popular. Each spring, the Haw River Festival is held at three locations along the river. It includes music, food, arts & crafts, and environmental exhibits.

### **Sarah P. Duke Gardens (Durham County)**

The extensive gardens and a native plant area are located on the grounds of Duke University.

### **Eno River State Park (Durham and Orange Counties)**

This linear park consists of over 2,633 acres along the Eno River. It offers opportunities for picnicking, hiking, canoeing, primitive camping and nature study. The area has upland forests, with the picturesque river the park's main feature. An annual July 4th Eno River Festival is held at West Point on the Eno, a city of Durham park, to raise money for expansion of Eno River State Park. The folk arts and music festival attracts thousands annually.

### **Raven Rock State Park (Harnett County)**

Raven Rock State Park, near Lillington, consists of over 3,549 acres of park land and is noted for its striking rock formation, extensive forest, unique plant life, and rolling terrain. The park offers camping, bridle trails, canoe camping accessed from the Cape Fear River, picnicking, fishing, hiking, and nature study.

### **Clemmons State Forest (Johnston & Wake Counties)**

This 314-acre educational state forest demonstrates the many uses of woodlands — wildlife protection, timber products, education, and recreation. It offers group tent camping, hiking, picnicking, and forestry and nature study.

### **Bentonville Battleground (Johnston County)**

This 125-acre state historic site was the location of the last full-scale action of the Civil War in which the Confederate Army was able to mount an offensive attack.

### **N.C. Botanical Gardens (Orange County)**

This 307-acre botanical garden contains the largest collection of native plants and herbs in the Southeast. Located in Chapel Hill, it offers nature trails, walking tours, classes, plant sales, and a reference library.

### **Falls Lake (Wake & Durham Counties)**

Falls Lake is a 12,490-acre recreational flood-control and water-supply lake. The N.C. Division of Parks and Recreation operates the 5,035-acre Falls Lake State Recreation Area. The recreation area public-use sites on the lake offer boat launching, camping, hiking, picnicking, swimming, and fishing. There is also a marina operated by a concessionaire. The Corps of Engineers and N.C. Wildlife Resources commission also operate facilities at the lake.

### **Duke Forest (Durham & Orange Counties)**

Duke Forest is Duke University's privately owned research forest consisting of 8,300 acres in Durham and Orange counties. In addition to educational use, the forest also provides recreational opportunities.

### **William B. Umstead State Park (Wake County)**

This 5,395-acre state park has forests and plant communities typical of the Piedmont Province of North Carolina. It also has excellent natural species diversity, containing over 800 plant species, 60 species of reptiles and amphibians, over 185 bird species, and over 20 mammal species. It offers an extensive trail system, three small lakes, nonmotorized boating, individual and group camping, picnicking, and fishing.

### **Harris Lake (Wake and Chatham Counties)**

Harris Lake, a 4,150-acre lake in Chatham County that was constructed to provide cooling water for the Shearon Harris Nuclear Power Plant, is owned by Carolina Power and Light Company. It is also used for recreational purposes.

### **Game Lands (Chatham, Durham, Wake, & Lee Counties)**

The N.C. Wildlife Resources Commission operates game lands within the Research Triangle region. These include the 986-acre Chatham Game Land, the 40,626-acre New Hope Game Land at Jordan Lake, the 2,421-acre Lee Game Land, the 7,790-acre Shearon Harris Game Land, and the 43,554-acre Butner-Falls of the Neuse Game Lands.

### **Other Outdoor Recreation Opportunities**

The Research Triangle region's county and municipal governments offer a variety of outdoor recreational areas and facilities. These include smaller lakes that offer recreational activities, such

as Lake Michie and Little River Reservoir in Durham County; Cane Creek Reservoir and University Lake in Orange County; and lakes Crabtree, Wheeler, Johnson, and Benson in Wake County.

## **V. SUMMARY OF LAWS GUIDING PARK MANAGEMENT**

There are many federal and state statutes, state and federal executive orders, and administrative rules and policies that govern the operation of the state parks system. This chapter includes a brief discussion of the primary legal basis for the existence and operation of the state parks system. It also includes other legal issues of particular concern at Jordan Lake State Recreation Area.

### **STATE LEGAL MANDATES**

#### **North Carolina Constitution**

Article XIV, Section 5 of the North Carolina Constitution sets overall policy by broadly defining the conservation and protection of natural resources and the acquisition of such resources as a proper function of government. The amendment reads in part as follows:

*It shall be the policy of this State to conserve and protect its lands and waters for the benefit of all its citizenry, and to this end it shall be a proper function of the State of North Carolina and its political subdivisions to acquire and preserve park, recreation, and scenic areas, to control and limit the pollution of our air and water, to control excessive noise, and in every other appropriate way to preserve as a part of the common heritage of this state its forests, wetlands, estuaries, beaches, historical sites, open land, and places of beauty.*

#### **State Parks Act**

The State Parks Act (G.S. 113-44.7 through 113-44.14) sets forth a mission statement for the state parks system. It states that the system functions to preserve and manage representative examples of significant biologic, geologic, scenic, archaeologic, and recreational resources, and that park lands are to be used by the people of the state and their visitors and descendants in order to promote understanding of and pride in the state's natural heritage.

The State Parks Act also calls for development and periodic revisions of a State Parks System Plan to achieve the mission and purpose of the state parks system in a reasonable, timely, and cost-efficient manner. The Act describes System Plan components and requires that public participation be a component of plan development and revisions.

The State Parks Act also calls for the classification of park resources and development of general management plans (GMPs) for each park. GMPs are to include a statement of park purpose, an analysis of major resources and facilities, and a statement of management direction.

## **Powers and Duties of the Department of Environment and Natural Resources**

This legislation (G.S. 113-8) authorizes the Department to make investigations of the resources of the state and to take such measures as it may deem best suited to promote the conservation and development of such resources. It also authorizes the Department to care for state forests and parks and other recreational areas now owned, or to be acquired by, the state.

### **North Carolina Environmental Policy Act of 1971**

Recognizing the profound influence that man's activity has on the natural environment, the General Assembly passed the Environmental Policy Act "*to assure that an environment of high quality will be maintained for the health and well-being of all...*"

The Act declares that:

*It shall be the continuing policy of the State of North Carolina to conserve and protect its natural resources and to create and maintain conditions under which man and nature can exist in productive harmony. Further, it shall be the policy of the State to seek, for all its citizens, safe, healthful, productive, and aesthetically pleasing surroundings; to attain the widest possible range of beneficial uses of the environment without degradation, risk to health or safety; and to preserve the important historic and cultural elements of our common inheritance. (G.S. 113A-3)*

While there are other General Statutes that concern the state parks system and the environment, the above-described statutes, along with Article XIV, Section 5, of the North Carolina Constitution, largely define the purposes of the state parks system and serve to guide the operation of state park system units.

## **FEDERAL LAWS**

### **Flood Control Act of 1944 and Land and Water Conservation Fund Act**

The B. Everette Jordan Dam and Lake project was authorized as part of the "general comprehensive plan for flood control and allied purposes" as outlined in the Flood control Act approved June 28, 1938 and amended in 1944 (PL 543 — 78th Congress). The act specifies coordination with state agencies in planning for flood control and watershed development. This act was amended by the Land and Water Conservation Fund Act of 1965, which gives authority to the Corps of Engineers to develop and maintain recreational facilities on water resource projects.

## **Public Law 88-253**

This law, approved December 30, 1963, authorized the construction of the B. Everette Jordan Dam and Lake. The project was the initial project in a comprehensive plan of water resource development for the Cape Fear River Basin. Land and water areas of the Jordan reservoir are to be planned, developed, administered, and managed so as to obtain optimum sustained benefits from conservation, enhancement, preservation, and use of natural and developed resources in accordance with applicable laws and policies of Congress and the policies and guidelines issued by the Corps of Engineers.

### **Federal Water Protection Recreation Act**

This act, Public Law 89-72 (July 9, 1965) specifies non-federal participation in cost sharing. It became applicable to the Jordan project upon completion of the initial construction phase, after June 30, 1980. Operation, maintenance, and future development of recreational facilities will be the responsibility of the state.

### **Americans With Disabilities Act**

Title II of the ADA prohibits discrimination against any "*qualified individual with a disability.*"

#### **New Construction and Alterations**

*"...buildings that are constructed or altered by, on behalf of, or for the use of a public entity shall be designed, constructed, or altered to be readily accessible to and usable by individuals with disabilities."* (Section 35.151 of Title II)

#### **Existing Facilities**

*"...structural changes in existing facilities are required only when there is no other feasible way to make the public entity's program accessible"* ("structural changes" include all physical changes to a facility) (28 CFR Part 35, Section 35.150, Title II of the ADA Section-by-Section Analysis). When alterations affect access to a primary function of a facility, the entity shall also make alterations to the path of travel to the area and bathrooms, public telephones, and drinking fountains serving the altered area.

#### **Programs and Services**

*"...each service, program, or activity conducted by a public entity, when viewed in its entirety, be readily accessible to and usable by individuals with disabilities."* (Title II, Section 35.150)

This includes, but is not limited to, the provision of auxiliary aids and services, including services and devices for effective communication (making orally and visually delivered materials available

to persons with disabilities) where necessary to afford persons with disabilities an equal opportunity to participate in and enjoy the benefits of a service, program, or activity conducted by a public entity.

### Signs

A public entity must ensure that persons with impaired vision and hearing can obtain information regarding the location of accessible services, activities, and facilities. Signs must be provided at all inaccessible entrances to each facility directing users to an accessible entrance or to a location where information can be obtained about accessible facilities. The international symbol for accessibility must be used at each accessible entrance to a facility. (Title II, Section 35.163)

## PLANNING DOCUMENTS

### Master Plan

The *Master Plan for Development and Management* for the Jordan Reservoir Project was completed in 1977. It provides a framework for overall planning and includes concept plans, cost estimates, and recommendations. The master plan assesses the environmental resources of the project area; evaluates factors that influence and constrain resource development and management; consolidates previous input into the planning process; and establishes a guide for the proper planning, development, and management of the project.

The master plan addresses area growth and corresponding recreational demand as well as the optimum development to accommodate demand. The master plan guides the development, use, and treatment of land and water resources in facilitating environmental protection, wildlife enhancement, and recreation.

The U.S. Army Corps of Engineers is currently updating the master plan.

### Operational Management Plan

The *Jordan Lake Operational Management Plan* (January 1993) describes how resource management objectives and concepts contained in the project master plan will be implemented and achieved. It addresses division of responsibility, policy, procedural guidance and recognition of special and unique management concerns for all personnel involved with administration and management of B. Everette Jordan Lake. The plan, divided into three interdependent areas, establishes a framework for dual Corps-State management of the project. The three plan areas are natural resource management, park management, and project-wide management programs.

## STATE-FEDERAL LEASE

In October of 1981, the state entered into a 50-year lease for approximately 45,478 acres of land and water to be used for public park, recreational, fish, wildlife, and other natural resource management purposes. In keeping with these multiple purposes, the leased acreage is allocated to three state agencies: the Division of Parks and Recreation, the Division of Forest Resources, and the Wildlife Resources Commission. The federal government agreed to fund 100 percent of the costs for initial master plan development, and the state agreed to assume all costs of operation, maintenance, and replacement of recreational facilities.

Provisions of the lease include:

- The state may provide additional facilities to meet public demand either directly or, with Corps approval, through concessions.
- User fees, with rates and prices comparable to those in the area and at other reservoirs, may be charged.
- All money received by the state may be used for administration, maintenance, operations, and development at the project or returned to the federal government..
- The Corps must approve construction landscaping, and architectural work.
- Premises should be well maintained, kept in good order, and be safe, clean, and sanitary.
- The United States is not responsible for damages to property or injuries to people.
- Concessionaires and subleases must have liability insurance.
- The state can cancel the lease with a 24-month notice.
- Lifeguards will be furnished during authorized swim periods. (The Division of Parks and Recreation intends to negotiate a change in this provision.)
- The primary responsibility for shoreline maintenance — including stump removal, erosion, and driftwood removal — belongs to the Corps.



## **VI. NATURAL AND CULTURAL RESOURCE MANAGEMENT**

### **NATURAL RESOURCE MANAGEMENT POLICY**

The Division of Parks and Recreation's approach to natural resource management is directed by the North Carolina Constitution and the State Parks Act, both of which require the prudent management of natural resources. The constitution sets the overall policy by broadly defining the conservation and protection of natural resources and the acquisition of such resources as a proper function of government. The State Parks Act states that unique archaeological, geological, biological, scenic and recreational resources are a part of the heritage of the people that "*...should be preserved and managed by those people for their use and for the use of their visitors and descendants.*"

The North Carolina state parks system plays an important role in maintaining, rehabilitating and perpetuating the state's natural heritage. The natural resources of the state parks system are: high quality, rare or representative examples of natural communities; native plants and animals; geological features and landforms; water resources; and the natural processes that affect these resources. The primary objective in natural resource management will be the protection of natural resources for their inherent integrity and for appropriate types of enjoyment while ensuring their availability for future generations.

It is the Division's policy that natural resources will be managed by allowing natural environments to evolve through natural processes with minimal human influence. Natural resource management will not attempt solely to preserve individual species or processes; rather, it will attempt to maintain all the components and processes of a park's naturally evolving ecosystems. When intervention is necessary, direct or secondary effects on park resources will be minimized to the greatest extent possible. Intervention of natural processes may occur:

- 1) to correct or compensate for the previous human disruption of natural processes;
- 2) to protect, restore or enhance rare species and natural communities;
- 3) to protect, restore or enhance significant archaeological resources;
- 4) to construct, maintain, improve or protect park facilities; and,
- 5) to prevent danger to human health or safety around park facilities.

All park facilities will be designed, constructed and maintained to avoid adverse impacts to high quality natural communities, rare plant and animal species, major archaeological sites and other significant natural and cultural resources.

## NATURAL COMMUNITIES

The natural communities in the Jordan Lake area include a variety of Piedmont forest and wetland habitats. The Division of Parks and Recreation leases approximately 3,900 acres, or 12 percent of the total Jordan Lake project, from the Corps of Engineers. Much of this land is either former agricultural land that supports a variety of mixed pine-hardwood successional stands or is associated with heavily developed recreational areas.

Examples of high quality natural communities occur at several locations on Division-managed lands, however. Many examples of high quality natural communities also occur around the lake and adjacent to Division-managed lands. Many of the highest quality natural communities occur in seven Registered Natural Heritage Areas, all of which are on lands managed by the North Carolina Wildlife Resources Commission, the Division of Forest Resources, the UNC-Chapel Hill Botanical Garden, and the Corps of Engineers.

These descriptions have been included in this document in order that readers can get a more complete understanding of the landscape around Jordan Lake. The community descriptions follow the *Classification of the Natural Communities of North Carolina: Third Approximation* (Mike Schafale and Alan Weakley, 1990).

### Piedmont/Mountain Levee Forest

An example of this natural community type occurs on Division-managed lands near the Haw River at the Seaforth Recreation Area. This forest community is seasonally and intermittently flooded and typically occurs on natural levee and point bar deposits on large river floodplains. The canopy is dominated by a mixture of bottomland species, including sycamore (*Platanus occidentalis*), river birch (*Betula nigra*), box elder (*Acer negundo*), sweetgum (*Liquidambar styraciflua*), and cherrybark oak (*Quercus pagoda*). Understory species are predominantly juvenile canopy species. Shrubs include common spicebush (*Lindera benzoin*), painted buckeye (*Aesculus sylvatica*), yellowroot (*Xanthorhiza simplicissima*), and giant cane (*Arundinaria gigantea*). The herb layer is typically lush and fairly diverse. Common species include false nettle (*Boehmeria cylindrica*), wingstem (*Verbesina alternifolia*), early saxifrage (*Saxifraga virginiensis*), and woodland stonecrop (*Sedum ternatum*).

### Mesic Mixed Hardwood Forest (Piedmont Subtype)

This community type occurs on steep, north-facing slopes, ravines, and occasionally along well-drained small stream bottoms. Although several high quality examples of this natural community type were inundated by the reservoir, good quality examples still occur in the areas around Seaforth and Parker's Creek. The canopy is dominated by beech (*Fagus americana*), northern red oak (*Quercus rubra*), tulip poplar (*Liriodendron tulipifera*), and red maple (*Acer rubrum*). Typical understory trees include dogwood (*Cornus florida*), hop-hornbeam (*Ostrya virginiana*), red maple, and American holly (*Ilex opaca*). Shrub species include deerberry (*Vaccinium stamineum*), downy

arrowwood (*Viburnum rafinesquianum*), American strawberry-bush (*Euonymus americana*), and sometimes mountain laurel (*Kalmia latifolia*). The herbaceous layer is often moderately dense and diverse, though it may be sparse under heavy shade. Common species include rattlesnake fern (*Botrychium virginianum*), maidenhair fern (*Adiantum pedatum*), wild geranium (*Geranium maculatum*), yellow lady slipper (*Cypripedium calceolus*), featherbells (*Stenanthium gramineum*), bloodroot (*Sanguinaria canadensis*), round-lobed hepatica (*Hepatica americana*), and mayapple (*Podophyllum peltatum*).

### Floodplain Pool

Floodplain pools occur in depressions in abandoned river channels on floodplains in the Mountain and Piedmont regions. They usually hold standing water for much or all of the year. Although this community type is widespread, examples are generally small and uncommon in the Piedmont. An example of this community occurs at Jordan Lake in the Seaforth area. Because of its hydrology, the central portion of this community type usually lacks a well developed canopy. The edges generally support aquatic and wetland species, including royal fern (*Osmunda regalis*), northern long sedge (*Carex folliculata*), fringe sedge (*C. crinita*), false nettle (*Boehmeria cylindrica*), marsh seedbox (*Ludwigia palustris*), and sphagnum moss (*Sphagnum spp.*). Typical shrub species include tag alder (*Alnus serrulata*).

### Dry-mesic Oak-hickory Forest

This forest type occurs on mid-slopes, low ridges, upland flats, and other dry-mesic upland areas on acidic soils. This was once one of the most predominant community types in the Piedmont; much of its original range has been affected by agriculture or urban development, but this type is still relatively common compared to most natural community types. However, examples of significant size and quality are rare.

Examples of this community type occur at Jordan Lake in the Parker's Creek, Poplar Point, Ebenezer and Seaforth areas. The forest is dominated by a mixture of oaks and hickories, with white oak (*Quercus alba*) most prevalent. Northern red oak (*Q. rubra*), black oak (*Q. velutina*), mockernut hickory (*Carya alba*), red hickory (*C. ovalis*), pignut hickory (*C. glabra*) are also common. Tulip poplar and sycamore are also common in this forest type. Understory species include red maple, flowering dogwood, American holly (*Ilex opaca*), sourwood (*Oxydendrum arboreum*), and black gum (*Nyssa sylvatica*). Shrubs include deerberry (*Vaccinium stamineum*), downy arrowwood (*Viburnum rafinesquianum*), and American strawberry-bush (*Euonymus americana*).

## NATURAL HERITAGE PROGRAM ELEMENT OCCURRENCES

### Bald Eagle (*Haliaeetus leucocephalus*)

Although several rare species are known to occur on Corps of Engineer-owned land at Jordan Lake, only the bald eagle is known to occur on lands managed by the Division of Parks and Recreation. This species is designated as Endangered at the state level and Threatened at the federal level, meaning that it is in danger throughout all or a significant portion of its range. In order to manage appropriate nesting and roosting sites, a bald eagle management plan for Falls and Jordan lakes was prepared in 1991 by biologists from Virginia Polytechnic Institute.

## REGISTERED NATURAL HERITAGE AREAS

There are seven Registered Natural Heritage Areas covering approximately 1,700 acres at Jordan Lake, but none are located on lands leased to the Division of Parks and Recreation.

## NATURAL AND CULTURAL RESOURCE MANAGEMENT ISSUES

### Management Coordination with the Corps of Engineers

Management responsibilities on leased lands are addressed in the Corps of Engineers' Operations & Management Plan and lease with the State; however, the language is unclear and subject to differing interpretations. Issues of concern have included rare species management, pest species management, and forest management. Although the working relationship between Division and Corps staff at Jordan Lake has typically been quite cooperative and positive, Division staff have suggested that management responsibilities on leased lands at all of the federally-owned reservoirs be clarified through a Memorandum of Understanding.

### Southern Pine Beetle Management

Small outbreaks of southern pine beetles have occurred on Division-managed lands at Jordan Lake. Agreement between Corps and park staff over the methods and extent of control has generally been mutual, and action in the affected areas has proceeded with little controversy.

Southern pine beetles are a native species and their presence is not unexpected; therefore, for small outbreaks that do not threaten recreational facilities or visitor safety, the Resource Management Program has recommended that park staff selectively cut and drop only the affected trees. Large scale salvage operations are not recommended. In areas where facilities, park neighbors, or visitor safety are threatened, beetle-killed trees have been cut and removed. This is consistent with the Division's resource management policy and pine beetle management guidelines.

The Resource Management Program recommends that park field staff continue to manage pine

beetle outbreaks by monitoring and taking appropriate actions to minimize danger to facilities and visitors. Beetle-killed trees that threaten facilities should be marked and removed as soon as possible; removals are to be planned so that secondary damage to the area is minimized.

## Cultural Resources

Prior to the reservoir's inundation, extensive archaeological investigations were conducted in the Jordan Lake area. These investigations, which began in 1963 and continued until the early 1980s, documented over 450 historic and prehistoric sites within the lake's nearly 47,000 acre area. These sites represent the full range of prehistoric and historic cultures that have been identified for the eastern part of the United States. These surveys have provided a very large population of sites with which to compare later discoveries and define the chronology of the area's prehistoric occupation.

Four of these sites have been deemed significant enough to warrant listing in the National Register of Historic Places. The Newkirk Site, which is located in the campground area at Parkers Creek, is the only one on Division-managed property. The Newkirk Site contains Early to Late Archaic remains dating from 2,500 to 10,000 years ago; the site has never been fully investigated, and although additional work could provide valuable information on the transition between the Woodland and Archaic time periods (up to 10,000 years go), staff at the Office of State Archaeology have indicated that additional work is not critical and is unlikely to occur.

## Updated Natural Resources Inventories

The natural resources in and around the Jordan Lake project were inventoried prior to the lake's inundation. However, much of that information is now out of date, and a comprehensive, updated natural heritage survey is needed for the entire park. These inventories would help identify additional high quality areas for designation as Registered Natural Heritage Areas and would provide baseline data for a natural resources monitoring program. These data would also allow for expanded interpretation and education programs.

## Pine Plantation Management

Several areas at Jordan Lake support pine plantations or other high density successional communities on former agricultural lands. Field staff and Corps biologists have expressed concern over the susceptibility of these areas to fire and southern pine beetles. These low quality stands can be very susceptible to beetle attacks; the fuel loads and fire hazards resulting from such outbreaks could be significant.

The Resource Management Program has discussed this issue with Corps biologists and Jordan Lake field staff, and recommends that fuel reduction burns and thinning operations be considered in these areas in order to decrease beetle and fire susceptibility. These manipulations would be consistent

with the Division's resource management policy, which allows for management actions that are intended to restore natural communities. Resource Management Program staff will work with Jordan Lake field staff to develop management plan for the plantation areas by identifying burn units and developing burn prescriptions.

### **Fire Management**

Fire management on Division-managed lands at Jordan Lake has been limited to suppressing wild fires; burning for ecological purposes has not occurred. Periodic fire in the park's natural communities is an appropriate natural process and would help to restore and maintain representative examples of Piedmont vegetation. As noted above, the Resource Management Program recommends that burn units be identified in and around high-use areas so that prescribed burning can be used to reduce fuel loads, thin unusually heavy stands, and manage other flammable vegetation near facilities.

### **Resource Management Plan**

A comprehensive, park-specific resource management plan addressing these and other issues is needed. This plan should include detailed actions whose implementation will prevent or correct resource threats or damage. The addition of district resource management specialists would facilitate the development of this plan.

## **VII. PHYSICAL PLANT INVENTORY**

### **FACILITY INVENTORY AND INSPECTION PROGRAM**

Buildings and other structures in state parks are necessary to provide services to park visitors. These structures are essential for protecting public safety, health, and welfare while providing opportunities for outdoor recreation. They include infrastructure, such as roads, parking lots, trails, and systems for potable water, electrical distribution, and sewage treatment. They also include operational and recreational facilities, such as campgrounds, picnic areas, concession building, boardwalks, park offices, residences, pumphouses, warehouses, barracks, maintenance shops, visitor centers, etc.

These facilities must be properly maintained to provide for a safe, continuous, and quality park-use experience.

The Facility Inventory and Inspection Program (FIIP) is a computer-based system used to track the condition, maintenance needs, and repair costs of every building in the state parks system. A principal objective of FIIP is to identify deficiencies that may create a risk to health, or have the potential for fire or risk of injury or death. Other objectives are to identify accessibility deficiencies and other significant maintenance-related deficiencies.

During a field evaluation of each facility, deficiencies are given priority ratings of critical, serious, or minor. The deficiencies are classified in nine basic categories: site (the grounds and walkways surrounding the building); exterior envelope; interior envelope; fire/life safety; handicapped accessibility; public health; heating/ventilation/air conditioning (HVAC); plumbing; and electrical.

The field evaluation begins with an inventory of all 89 structures in the park. The results of the inventory are presented using the building name and state property numbers as identification (Table VII-1). Next, the types of repairs and estimated repair costs are listed for each building needing repairs. Finally, the cost summary for the park is given using the nine basic categories of repairs (e.g. exterior envelope) and the three levels of deficiencies (critical, serious, and minor).

**Table VII-1. Jordan Lake State Recreation Area Building Inventory**

<u>BUILDING NUMBER</u>	<u>BUILDING NAME</u>	<u>IN USE</u>
<b>Office and Maintenance Area:</b>		
039001	State Park Headquarters	Y
039002	Ranger Residence	Y
039003	Ranger Residence	Y
039004	Ranger Residence	Y
039005	Wellhouse	Y
039006	Auto Shop	Y
039007	Warehouse	Y
039008	Carpentry Shop	Y
039009	Paint Storage Building	Y
039010	Vehicle Storage Shed	Y
<b>Crosswinds:</b>		
039101	Residence	Y
039102	Comfort Station	Y
039103	Wellhouse	Y
039104	Storage Building	Y
039105	Storage Building	Y
039106	Ticket Booth	Y
039107	Control Station	Y
039108	Washhouse #1	Y
039109	Wellhouse	Y
039110	Water Storage Building	Y
039111	Toilet Building	Y
039112	Washhouse #2	Y
039113	Wellhouse	Y
039114	Washhouse	Y
<b>Parkers Creek:</b>		
039201	Control Station	Y
039202	8 Table Picnic Shelter	Y
039203	Comfort Station w/Dressing Rooms	Y
039204	2 Table Picnic Shelter	Y
039205	8 Table Picnic Shelter	Y
039206	12 Table Picnic Shelter	Y
039207	Wellhouse/Water Storage Bldg.	Y
039208	Comfort Station	Y
039209	Wellhouse #8	Y
039210	Washhouse	Y
039211	Wellhouse #6	Y
039212	Washhouse	Y
039213	Comfort Station	Y
039214	Washhouse	Y

**Table VII-1. Jordan Lake State Recreation Area Building Inventory (cont'd.)**

<u>BUILDING NUMBER</u>	<u>BUILDING NAME</u>	<u>IN USE</u>
<b>Parkers Creek (cont'd.)</b>		
039215	Washhouse	Y
039216	Washhouse	Y
039217	Comfort Station	Y
039218	Washhouse	Y
039219	Waste Treatment Plant	Y
039220	Storage Building	Y
039221	Ranger Residence	Y
<b>Vista Point:</b>		
039301	Comfort Station	Y
039302	8 Table Picnic Shelter	Y
039303	Washhouse	Y
039304	Ticket Booth	Y
039305	Storage Building	Y
039306	Wellhouse/Water Storage Building	Y
039307	Waste Treatment Plant	Y
039308	Storage Building	Y
<b>Poplar Point:</b>		
039401	Control Station	
039402	Wellhouse at Control Station	Y
039403	Wellhouse (Well #23)	Y
039404	Toilet Building B	Y
039405	Washhouse B	Y
039406	Wellhouse (Well #20)	Y
039407	Washhouse C	Y
039408	Washhouse E-2	Y
039409	Toilet Building E-3	Y
039410	Toilet Building E-2	Y
039411	Washhouse E-1	Y
039412	Toilet Building	Y
039413	Water Storage Building	Y
039414	Washhouse F	Y
039415	Wastewater Control Building	Y
039416	Toilet Building G	Y
039417	Washhouse G	Y
039418	Washhouse H	Y
039419	Wellhouse (Well #17)	Y
039420	Washhouse J	Y
039421	Toilet Building J	Y
039422	Ranger Residence	Y

**Table VII-1. Jordan Lake State Recreation Area Building Inventory (cont'd.)**

<u>BUILDING NUMBER</u>	<u>BUILDING NAME</u>	<u>IN USE</u>
<b>Ebenezer Church:</b>		
039601	Control Station	Y
039602	12-Table Picnic Shelter	Y
039603	Toilet Building	Y
039604	4-Table Picnic Shelter	Y
039605	4-Table Picnic Shelter	Y
039606	Toilet Building w/Dressing Rooms	Y
039607	Toilet Building	Y
<b>Seaforth:</b>		
039801	Control Station	Y
039802	Tool Shed	Y
039803	Toilet Building	Y
039804	Wellhouse	Y
039805	Wellhouse	Y
039806	12-Table Picnic Shelter	Y
039807	Toilet Building w/Dressing Rooms	Y

**JORDAN LAKE STATE RECREATION AREA  
STATUS OF FACILITIES**

Buildings at Jordan Lake are of fairly recent construction and thus tend to be in good condition. Only three require repairs totaling over \$10,000, one needs an addition which will cost over \$10,000, and most require much less work than that.

**Note:** Only buildings requiring work are included in this report.

**Accessibility:** Information included in this report is from the original park assessment. A comprehensive review of accessibility is planned at a later date.

Bldg. No.	Building Name/ Work Requirement	Repair Cost
<b>OFFICE AND MAINTENANCE AREA</b>		
039-001	<b>Park Office</b>	\$10,134
	Replace two doors	540
	Repair slate patio	1,665
	Add rain diverters	60
	Repaint interior	7,869
039-002	<b>Ranger Residence</b>	\$10,065
	Replace damaged foundation vents	405
	Regrade for proper drainage	300
	Add gutters	945
	Replace fans	210
	Replace heat pump	6,255
	Replace carpet in hall, bedrooms; wood floor in living room	1,950
039-003	<b>Ranger Residence</b>	\$1,950
	Replace carpet	
039-004	<b>Ranger Residence</b>	\$1,503
	Replace damaged chimney cap	90
	Replace damaged flex duct	303
	Repaint interior	765
	Replace hose bibbs	45
	Add whole-house water filter	300

Bldg. No.	Building Name/ Work Requirement	Repair Cost
039-005	Well house	\$1,035
	Add GFI breakers	300
	Replace damaged trim	192
	Replace damaged siding, repaint all	465
	Add fire extinguisher	78
039-008	Carpentry Shop	\$4,050
	Add dust collection system	2,250
	Replace paint booth with tool room and office	1,800
	<b>Subtotal, Office and Maintenance Area</b>	<b>\$28,737</b>
<b>CROSSWINDS</b>		
039-102	Toilet Building	\$6,003
	Replace doors	1,200
	Add GFI breakers	900
	Replace damaged trim	90
	Replace roofing	1,800
	Replace damaged siding, repaint	1,728
	Add insulation	285
039-103	Wellhouse	\$2,025
	Replace lights with floorescent	225
	Move opening to old chlorine room to interior wall	1,200
	Replace damaged trim	90
	Replace roofing	360
	Add insulation	150
0039-104	Storage Building	\$191
	Repaint	90
	Repair roof edge	101
039-107	Control Station	\$2,100
	Add photocell for outside lights	60
	Replace damaged windows	1,440
	Replace damaged wallboard, repaint	600

Bldg. No.	Building Name/ Work Requirement	Repair Cost
039-108	Washhouse #1	\$1,170
	Add two floorescent lights	450
	Replace damaged trim	120
	Renail siding, repaint	600
039-109	Well house	\$1,380
	Replace damaged trim, siding, repaint all	
039-111	Toilet Building	\$585
	Repaint	285
	Regrade for proper drainage	300
039-112	Washhouse #2	\$846
	Add two floorescent lights	450
	Repaint siding	396
039-113	Wellhouse	\$1,380
	Replace damaged siding, repaint all	
039-114	Washhouse	\$1,170
	Add two floorescent lights	300
	Renail siding, repaint	720
	Regrade for proper drainage	150
	<b>Subtotal, Crosswinds</b>	<b>\$16,850</b>

#### PARKER'S CREEK

039-201	Control Station	\$150
	Repaint	
039-202	8 Table Picnic Shelter	\$3,000
	Repaint	300
	Replace drinking fountain	2,700
039-203	Toilet Building with Dressing Rooms	\$2,310
	Replace two doors	450
	Replace and repaint siding	1860

<b>Bldg. No.</b>	<b>Building Name/ Work Requirement</b>	<b>Repair Cost</b>
<b>039-205</b>	<b>8 Table Picnic Shelter</b>	<b>\$3,000</b>
	Replace drinking fountain	2,700
	Repaint	300
<b>039-206</b>	<b>12 Table Picnic Shelter</b>	<b>\$780</b>
	Replace damaged trim	300
	Replace damaged siding, repaint all	480
<b>039-207</b>	<b>Wellhouse/Water Storage</b>	<b>\$1,452</b>
	Replace damaged trim	300
	Replace damaged siding, repaint all	1,152
<b>039-208</b>	<b>Toilet Building</b>	<b>\$576</b>
	Replace damaged siding, repaint all	
<b>039-209</b>	<b>Wellhouse</b>	<b>\$390</b>
	Replace damaged siding, repaint all	
<b>039-210</b>	<b>Washhouse</b>	<b>\$396</b>
	Repaint	
<b>039-213</b>	<b>Toilet Building</b>	<b>\$1,890</b>
	Replace roofing	
<b>039-214</b>	<b>Washhouse</b>	<b>\$210</b>
	Replace damaged trim	60
	Replace flashing	150
<b>039-215</b>	<b>Washhouse</b>	<b>\$9,228</b>
	Replace damaged trim	192
	Replace roofing	3,600
	Replace damaged siding and repaint all	2,736
	Replace drinking fountain	2,700
<b>039-216</b>	<b>Washhouse</b>	<b>\$4,956</b>
	Replace damaged trim	120
	Replace roofing	3,600
	Replace damaged siding and repaint all	1,236

Bldg. No.	Building Name/ Work Requirement	Repair Cost
039-217	Toilet Building	\$7,554
	Replace damaged trim	192
	Replace roofing	1,872
	Replace damaged siding and repaint all	2,790
	Replace drinking fountain	2,700
039-218	Washhouse	\$11,847
	Replace damaged trim	420
	Replace damaged siding and repaint all	11,427
039-220	Storage Building	\$12,900
	Enlarge building	
039-221	Ranger Residence	\$600
	Replace flashing at chimney	150
	Regrade for proper drainage	450
	<b>Subtotal, Parker's Creek</b>	<b>\$61,239</b>
	<b>VISTA POINT</b>	
039-303	Washhouse	\$1,342
	Replace door closure for accessibility	187
	Add switch back path for accessibility	1,155
	<b>Subtotal, Vista Point</b>	<b>\$1,342</b>
	<b>POPLAR POINT</b>	
039-401	Control Station	\$138
	Repaint	
039-403	Wellhouse	\$351
	Replace damaged siding and repaint all	
039-404	Toilet Building B	\$2,985
	Repaint	285
	Replace drinking fountain	2,700

<b>Bldg. No.</b>	<b>Building Name/ Work Requirement</b>	<b>Repair Cost</b>
<b>039-405</b>	<b>Washhouse B</b>	<b>\$486</b>
	Replace damaged trim	90
	Repaint siding	396
<b>039-406</b>	<b>Wellhouse</b>	<b>\$1,350</b>
	Replace damaged siding, repaint all	
<b>039-407</b>	<b>Washhouse C</b>	<b>\$3,396</b>
	Replace damaged trim	300
	Repaint siding	396
	Replace drinking fountain	2,700
<b>039-408</b>	<b>Washhouse E2</b>	<b>\$4,182</b>
	Replace damaged trim	300
	Repaint siding	732
	Replace drinking fountain	2,700
	Regrade for proper drainage	450
<b>039-409</b>	<b>Washhouse E3</b>	<b>\$3,537</b>
	Add GFI breaker	150
	Replace damaged trim	75
	Replace damaged siding and repaint all	612
	Replace drinking fountain	2,700
<b>039-410</b>	<b>Toilet Building E2</b>	<b>\$3,075</b>
	Replace damaged trim, repaint doors and trim	375
	Replace drinking fountain	2,700
<b>039-411</b>	<b>Washhouse</b>	<b>\$930</b>
	Replace damaged roofing, roof deck and truss	480
	Regrade for proper drainage	450
<b>039-412</b>	<b>Toilet Building</b>	<b>\$3,375</b>
	Repaint siding	225
	Replace drinking fountain	2,700
	Regrade for proper drainage	450
<b>039-413</b>	<b>Water Storage Building</b>	<b>\$3,000</b>
	Replace damaged siding and repaint all	

<b>Bldg. No.</b>	<b>Building Name/ Work Requirement</b>	<b>Repair Cost</b>
<b>039-414</b>	<b>Washhouse F</b>	<b>\$3,396</b>
	Replace damaged trim	300
	Repaint siding	396
	Replace drinking fountain	2,700
<b>039-416</b>	<b>Toilet Building G</b>	<b>\$2,985</b>
	Repaint siding	285
	Replace drinking fountain	2,700
<b>039-417</b>	<b>Washhouse G</b>	<b>\$2,835</b>
	Add GFI outlet	45
	Replace damaged trim	90
	Replace drinking fountain	2,700
<b>039-418</b>	<b>Washhouse H</b>	<b>\$546</b>
	Replace damaged trim	150
	Repaint siding	396
<b>039-419</b>	<b>Wellhouse</b>	<b>\$351</b>
	Replace damaged siding and repaint all	
<b>039-420</b>	<b>Washhouse J</b>	<b>\$2,790</b>
	Replace damaged trim	90
	Replace drinking fountain	2,700
<b>039-421</b>	<b>Toilet Building J</b>	<b>\$405</b>
	Replace damaged trim	120
	Repaint siding	285
<b>039-422</b>	<b>Ranger Residence</b>	<b>\$750</b>
	Regrade for proper drainage	450
	Replace range hood	300
	<b>Subtotal, Poplar Point</b>	<b>\$40,863</b>

#### **EBENEZER CHURCH**

<b>039-602</b>	<b>12 Table Picnic Shelter</b>	<b>\$720</b>
	Replace damaged trim	120
	Replace damaged siding, repaint all	600

<b>Bldg. No.</b>	<b>Building Name/ Work Requirement</b>	<b>Repair Cost</b>
<b>039-603</b>	<b>Toilet Building</b>	<b>\$285</b>
	Repaint siding	
<b>039-604</b>	<b>4 Table Picnic Shelter</b>	<b>\$300</b>
	Repaint	
<b>039-605</b>	<b>4 Table Picnic Shelter</b>	<b>\$300</b>
	Repaint	
<b>039-606</b>	<b>Toilet Building w/ Dressing Rooms</b>	<b>\$405</b>
	Repaint siding	
<b>039-607</b>	<b>Toilet Building</b>	<b>\$285</b>
	Repaint siding	
	<b>Subtotal, Ebenezer Church</b>	<b>\$2,295</b>
 <b>SEAFORTH</b>		
<b>039-801</b>	<b>Control Station</b>	<b>\$1,590</b>
	Replace damaged windows	1,440
	Regrade for proper drainage	150
<b>039-802</b>	<b>Tool Shed</b>	<b>\$135</b>
	Repaint siding	
<b>039-803</b>	<b>Toilet Building</b>	<b>\$525</b>
	Replace damaged trim	240
	Repaint	285
<b>039-804</b>	<b>Wellhouse</b>	<b>\$543</b>
	Replace door	225
	Repaint siding	90
	Repaint interior	228
<b>039-805</b>	<b>Wellhouse</b>	<b>\$543</b>
	Replace door	225
	Repaint siding	90
	Repaint interior	228

Bldg. No.	Building Name/ Work Requirement	Repair Cost
039-806	<b>12 Table Picnic Shelter</b>	\$960
	Replace damaged trim	240
	Replace firebrick in fireplace	450
	Repaint	270
039-807	<b>Toilet Building w/ Dressing Rooms</b>	\$2,640
	Replace doors	450
	Replace damaged trim	240
	Replace exhaust fans	1,950
	<b>SUBTOTAL, SEAFORTH</b>	<b>\$6,936</b>
	<b>TOTAL</b>	<b>\$158,262</b>

## FACILITY REPAIR NEEDS COST SUMMARY

DEFICIENCY CATEGORY	PRIORITY 1 (CRITICAL)	PRIORITY 2 (SERIOUS)	PRIORITY 3 (MINOR)	CATEGORY SUBTOTAL
Site	450	2,700	0	3,150
Exterior Envelope	0	72,528	1,346	73,874
Interior Envelope	0	23,625	3,900	27,525
Fire/Life Safety	0	78	0	78
Handicapped Access	0	39,142	0	39,142
Public Health	0	0	0	0
HVAC	0	4,803	6,465	11,268
Plumbing/Utility	0	345	0	345
Electrical	0	2,880	0	2,880
TOTALS:	450	146,101	11,711	158,262

Deficiencies that are a fire threat or threat to life, safety, or the health of an individual are considered to be "critical." A "serious" deficiency is one that is not considered a fire threat or threat to life or safety, but which could cause further damage to the structure if left uncorrected. This category usually includes building code violations. "Minor" deficiencies are those requiring general maintenance and repair.

## ROAD AND UTILITIES INVENTORY

### Water Systems

#### POPLAR POINT WATER SYSTEM

Description: The camping areas are served by five water wells of unknown depths. All wells have submersible pumps of the following sizes and gallons per minute: Well #17 - 10 HP with a pumping rate of 90 GPM; Well #20 - 10 HP with a pumping rate of 30 GPM; Well #23 - 5 HP with a pumping rate of 47 GPM; Well #22 - 5 HP with a pumping rate of 30 GPM; and well #15 - 2 HP with a pumping rate of 16.5 GPM. The water storage facility has two 10,000 gallon hydropneumatic tanks with all necessary controls and appurtenances. Greensand filters are on Well #17. There are approximately 58,000 linear feet of PVC water main distribution systems of various sizes that supply the area.

Current Conditions: The system was installed in 1990 and is in fair shape. Two wells are currently out of service due to underground electrical control cable ground faults. A radio telemetry system currently is being installed to correct the problems. The three residences and maintenance area were tied into the Poplar Point water system in 1994 due to poor water quality at the state administration building. Numerous water leaks have occurred with the system.

Repair Needs: (1) Replace control wiring to wells that do not have radio telemetry systems. (2) Replace chlorinator at Well #23 with high pressure chlorinator. (3) Install three blow offs and add five additional valves. (4) Install new pressure switch at water storage facility. (5) Drill new well because of bacteria problems.

Repair Cost: (1) Replace control wiring - no estimate cost available at the time of this writing. (2) Replace chlorinator - \$500. (3) Eight valves \$500 each = \$4,000. (4) New switch - \$500. (5) New Well = \$10,000.

#### CROSSWINDS CAMPGROUND WATER SYSTEM

Description: This recreation area is served by two water wells of unknown depths. All wells have submersible pumps of the following size and capacity: Well #32 - 34 GPM @ 375' TDH; Well #33 - 34 GPM @ 364' TDH. The water storage facility has one 4,000 gallon hydropneumatic storage tank and controls with a 7-1/2 HP 14 stage turbine pumps. Water is treated with three manually operated manganese greensand filters complete with chemical feed systems and all control valves. The water distribution system consists of approximately 21,300 linear feet of various size PVC piping.

Current Conditions: The system was installed in 1993 and is in good shape.

Repair Needs: (1) Add two blow-off valves. (2) Tie onto the Chatham County water system when it becomes available in the fall of 1996 as a test case for the rest of Jordan Lake for a two-year trial period.

Repair Cost: (1) Two blow-off valves @ \$500 each = \$1,000. (2) Tie in cost - 1,320 linear feet @ \$10/lft. = \$13,320. Tap on fee - \$10,000. Monthly water bill based on \$3/per 1,000 gallon use per month = \$750/month for four months a year.

## STATE ADMINISTRATION AND MAINTENANCE WATER SYSTEM

Description: This area is served by one well of unknown depth. The well has an 18 stage 7.5 HP submersible pump. There are two 500 gallon hydropneumatic storage tanks and a well xtrol 457 booster tank located at the office building for added pressure storage. A three tank greensand filter is also located at the well house. The water distribution system consists of approximately 1,000 linear feet of various size PVC piping, valves and appurtenances.

Current Conditions: The water system was installed in 1989 and is in fair shape.

Repair Needs: 1. Greensand filters need to be inspected for proper operation and plumbing by a factory maintenance representative.

Repair Cost: Inspection cost - \$1,500

## SEAFORTH WATER SYSTEM

Description: This area is supplied by two wells. Well #1 has a 7.5 HP submersible pump with a 36 GPM capacity @ 338' TDH. Well #2 has a 10 HP submersible pump with a 56 GPM capacity @ 340' TDH. All related controls, valves and chlorination is in Well House #2. A 500 gallon hydropneumatic tank with related controls is also located at Well House #2. No iron treatment is at this facility. The distribution system consists of approximately 8,000 linear feet of various sizes of PVC piping.

Current Conditions: The water system was installed in 1991 and is in fair shape. There is a history of sand problems in Well #1 and problems with pump controls and undersized storage tanks.

Repair Needs: Increase hydropneumatic tank size to 5,000 gallons at Well House #2.

Repair Cost: Hydropneumatic tank replacement - 5,000 gallon tank - \$5,000

## PARKERS CREEK WATER SYSTEM

Description: This area is served by two water wells of unknown depths. Well #1 has a capacity of approximately 115 GPM. Well #2 has a capacity of 15 GPM. Water is pumped to a central water storage building that houses a 10,000 gallon hydropneumatic tank with related controls. No iron treatment is located at this facility. The distribution system consists of approximately 31,680 linear feet of various sizes of PVC. The water system supplies approximately 2,000 gallons a day to the North Carolina Forest Service facilities at Jordan Lake.

Current Conditions: The water system was installed in 1985 and is in fair shape. The system has had many problems over the years with breaks in the water line due to poor installation. The control cables to the wells have been replaced within the last three years.

Repair Needs: Add five blow off valve assemblies.

Repair Cost: Five blow off valve assemblies @ \$500/each = \$2,500

## VISTA POINT WATER SYSTEM

Description: This area is served by one well of unknown depth. The capacity is also unknown but is estimated to be around 50 GPM. A 5,000 gallon hydropneumatic tank with related controls is located at the well site. No iron treatment is at this facility. The distribution system consists of approximately 14,000 linear feet of various sizes of PVC piping.

Current Conditions: The water system was installed in 1985 and is in fair shape. Several leaks have occurred in the distribution system since the system has been in operation, especially in the RV camping area. The storage tank was repainted in 1996.

Repair Needs: Replace water line to RV campground.

Repair Cost: Water line replacement - 1,500 linear feet @ \$10/lft = \$15,000; 4 valves @ \$500 each = \$2,000. Total = \$17,000

## NEW HOPE OVERLOOK WATER SYSTEM

Description: This area is served by one water well of 175 feet in depth. The well has a 2 HP - 20 GPM submersible Myers pump. The pump is set at 152 feet in the well and provides a flow rate of 16 GPM @ 323 TDH. The water storage tank is a 1,000 gallon hydropneumatic tank with compressor and related controls. There are approximately 14,000 linear feet of various size PVC piping used in the distribution system.

Current Conditions: The water system was installed in 1994 and is in good shape.

Repair Needs: None.

Repair Cost: None

## CROSSWINDS BOAT RAMP WATER SYSTEM

Description: This area is supplied by one well of unknown depth. The water storage tank is a 500 gallon hydropneumatic tank with a chlorinator and related controls. The water distribution system consists of approximately 1,000 linear feet of PVC piping.

Current Conditions: The system was installed in 1982 and is in fair shape.

Repair Needs: The area should be tied into the Chatham County Public water system when the area is developed as a swimming beach

Repair Cost: See cost estimate in Capital Improvements section for Crosswinds swimming beach.

## EBENEZER CHURCH WATER SYSTEM

Description: This area is served by the five wells at Poplar Point. The area has one well of unknown depth and capacity. It was abandoned in 1990 when the Poplar Point area opened. The water storage tank was dismantled and used at other park facilities. The distribution system consists of approximately 15,000 linear feet of various sizes PVC piping.

Current Conditions: The Poplar Point water distribution system is in good shape and was installed in 1989.

Repair Needs: See Poplar Point

Repair Cost: See Poplar Point

## Sewer Systems

### POPLAR POINT SEWER SYSTEM

Description: This sewer system is the largest at Jordan Lake. It collects domestic waste from Poplar Point, Ebenezer Church, the state administration and maintenance area, Crosswinds Marina and Crosswinds Campground. The sewer system consists of a 47,431 GPD spray irrigation treatment and disposal facility with two stabilization lagoons. Each lagoon has an operating depth of 4.5 feet; one yields an area of approximately 1.37 acres, and the other yields an area of approximately 2.95 acres. The system has dual gas chlorinators, a 243 GPM irrigation pump station equipped with dual pumps, and five irrigation fields each having a wetted area of approximately 4.3 acres with 39 spray nozzles. In 1994 an expansion of the Poplar Point Waste Water Treatment Facility was added to handle the additional sewage from Crosswinds Marina and Crosswinds Campground. This addition includes a 7.5 HP pump station with duplex pumps, high water alarms, approximately 3,700 linear feet of 3" force main, a new spray irrigation field with a wetted area of approximately 5 acres, and 47 spray nozzles.

The sewer collection system for Poplar Point consists of approximately 8,725 linear feet of 8" gravity sewer and 22 pump stations each equipped with duplex pumps and high water alarms with the following horse power rating: A 7.5 HP pump station and approximately 3,150 linear feet of 10" force main; a 3.0 HP pump station and approximately 1,400 linear feet of 6" force main; a 1.5 HP pump station and approximately 600 linear feet of 4" force main; a 3.0 HP pump station and approximately 1,200 linear feet of 6" force main; a 3.0 HP pump station and approximately 600 linear feet of 4" force main; a 3.0 HP pump station and approximately 1,600 linear feet of 6" force main; a 3.0 HP pump station and 900 linear feet of 4" force main and approximately 1,700 linear feet of 6" manifold/shared force main; a 3.0 HP pump station with approximately 1,400 linear feet of 6" force main, and approximately 650 linear feet of 6" manifold/shared force main; a 5.0 HP pump station with approximately 1,800 linear feet of 4" force main, approximately 1,400 linear feet of 6" manifold/shared force main, and approximately 650 linear feet of 6" manifold/shared force main; a 5.0 HP pump station with approximately 1,200 linear feet of 4" force main, approximately 1,400 linear feet of 6" manifold/shared force main, and approximately 650 linear feet of 6" manifold/shared force main; a 10.0 HP pump station with a new 2,000 gallon storage tank and approximately 6,400 linear feet of 6" force main; a 5.0 HP pump station, approximately 2,200 linear feet of 4" force main and approximately 2,700 linear feet of 4" manifold/shared force main, a 5.0 HP pump station with approximately 3,500 linear feet of 4" force main and approximately 2,700 linear feet of 4" manifold/shared force main.

Current Conditions: Overall, the Poplar Point sewer system is in fair to good shape. The additional spray field that was brought on line in 1995 is experiencing pressurization problems due to poor pipe blocking design. The spray fields are in need of undergrowth pruning. The pump station electrical junction box, lift chain, piping, and float supporters are very corroded and will need to be refurbished within the next five years. The sewage pumps are in fair to good condition with about 50 percent of normal life expectancy remaining. The permit is valid through June 5, 2000.

Repair Needs: (1) Existing lift stations need to be rehabbed with new floats, lifting chains, electrical junction boxes, float supports, and modified control panels. (2) Correct spray problems in new spray fields (under warranty). (3) Cut back underbrush and chip on site approximately 21.5 acres of sprayfield. (4) Tie-in Crosswinds boat ramp sewer system into the force main that goes to the Poplar Point Waste Water Treatment Plant. (5) Add two aerators to storage lagoons.

Repair Cost: (1) Rehab 14 lift stations @ \$3,500 each = \$49,000 (2) Correct spray problems = \$7,500 (3) Spray field pruning and landscaping 21.5 acres @ \$1,000/acre = \$21,500 (4) Construct force main to SR 1008:500 linear feet at \$15/lft. = \$75,000; Increase pumps at existing pump station at boat ramp: \$7,500; Design, survey and contingency (15%) = \$24,976 (5) Two aerators = \$10,000. TOTAL = \$194,575

## PARKERS CREEK SEWER SYSTEM

Description: This sewer system consists of a domestic waste 30,000 GPD spray irrigation treatment and disposal facility consisting of 9,300 linear feet of 8" gravity sewer; approximately 2,557 linear feet of 2" force main; approximately 1,187 linear feet of 3" force main; approximately 1,871 linear feet of 4" force main; approximately 4,167 linear feet of 6" force main; approximately 4,134 linear feet of 8" force main; seven pump stations, each with dual pumps and high water alarms; an aerated stabilization lagoon; two storage lagoons; post chlorination facilities; approximately 37 acres of irrigation area; and associated irrigation piping, sprinklers and appurtenances. The spray field is divided into three different areas with approximately twelve acres in each field.

Current Conditions: Hurricane Fran destroyed the spray fields on September 7, 1996. They were replaced during the spring and summer of 1997. All blown-down timber was removed and spray field piping was replaced or repaired. A new spray field access road was constructed. Spray field #3 was taken off the permitted system, and the monitoring well was deleted from the sewer permit.

Repair Needs: (1) Rehab existing pump stations with new floats, stainless steel lifting chains, electrical junction boxes, lift station lids, hourly counters on control panels, etc. (2) Undertake minor landscape work around lagoons.

Repair Costs: (1) Rehab five pump stations @ \$3,500/each = \$17,500 (2) Landscaping around lagoon: \$2,000; TOTAL = \$19,500

## SEAFORTH SEWER SYSTEM

Description: This system entails the operation of a 5,000 GPD waste water treatment facility consisting of a 66 GPM grinder pump station, a 48 GPM grinder pump station, a 48 GPM grinder pump station, a 26 GPM grinder pump station and a 62 GPM grinder pump station. All have dual pumps and high water alarms. There are approximately 25 linear feet of 2" force main, 4,680 linear feet of 3" force main and 90 linear feet of 4" force main. There is a 200,316 gallon capacity concrete lined storage lagoon, a solution chlorination system for disinfection of lagoon effluent, a 185 GPM pump station with dual submersible pumps and removable influent bar screen, an effluent flow meter, a 4.74 acre spray field, and all appurtenances.

Current Conditions: The system was placed into service in August 1991 and the current operating sewer permit expires on July 31, 1997. Overall, the plant is in good shape.

Repair Needs: (1) The check valve in the main lift station is bad and needs replacing. (2) Landscaping is needed around the ticket station lift station. (3) Float supports and floats in four lift stations are needed.

Repair Cost: (1) Check valve replacement: \$1,000 (2) Landscaping: \$200; (3) Float supports and floats: 5 lift stations @ \$1,000 = \$5,000; TOTAL = \$6,200

## VISTA POINT SEWER SYSTEM

Description: This system consists of the operation of a 2,350 GPD non-discharge land application spray irrigation type waste water collection, treatment and disposal facility. It consists of approximately 3,370 linear feet of 3" diameter force main; a 40 GPM pump station with dual and high water alarm; a 310,000 gallon facultative lagoon with a 1 HP floating mechanical aerator; a 64,000 gallon capacity storage lagoon; a chlorine contact tank with gas chlorinator; a 68 GPM irrigation pump station with dual pumps and auto-timer shut-off controls; approximately 1.6 acres of irrigation area, and all associated irrigation piping, sprinklers and appurtenances.

Current Conditions: The system was placed into service in November, 1983 and is still in fair to good condition. The existing non-discharge for Vista Point expires in November, 1998. Monitor well sampling has been eliminated from the non-discharge permit that was reviewed in 1993. The system is the easiest of all the systems to maintain.

Repair Needs: (1) Minor road work is needed in access roads to spray fields. (2) A few damaged sections of pipe need replacing. (3) The 40 GPM pump station needs to be rehabilitated, including replacement of the pump rail system, floats, lift chain, and electrical junction box and hour counters.

Repair Costs: (1.) Minor roadwork on spray access roads: \$1,000 (2) Pipe replacement (spray field): 200 linear feet @ \$2/lft = \$400 (3) Rehab pump station: \$4,000; TOTAL = \$5,400

## NEW HOPE OVERLOOK SEWER SYSTEM

Description: This system is a 2,500 gallon per day subsurface low-pressure sewer system with three sewer pump stations, one 1,000 gallon septic tank, one 2,500 gallon septic tank, 3,160 linear feet of low pressure piping, 2,000 linear feet of 4" PVC force main, necessary appurtenances, a 400 square foot sand filter bed, and three Clivus composting toilets located at the group camp areas.

Current Conditions: The system was installed in 1994 and is in poor condition. The system is permitted through the Chatham County Health Department, but there is no copy of an operating permit in the park maintenance file. There is currently no licensed operator for the sewer system. The system has failed several times in different areas of the low-pressure fields, and only one field is currently working. The fields were improperly landscaped, and some parts of the field had poor soil. There is also a problem with surface water getting into the drain lines.

Repair Needs: (1) A diversion ditch with a gravel under-drain system is needed above the existing drain field. (2) The drain field needs re-landscaping and grading. (3) Pressure heads need to be corrected.

Repair Costs: (1) Diversion ditch: \$5,000; (2) Re-landscaping and seeding: \$15,000; TOTAL = \$20,000

## CROSSWINDS BOAT RAMP SEWER

Description: This system is a 500-gallon-per-day subsurface low-pressure sewer system with a 1,500-gallon septic tank, a one-pump lift station, and 20-50 feet of 1¼ inch lateral lines.

Current Conditions: This system was installed in 1982 and is in poor shape. The sewer field is failing and has been repaired on several occasions. A cleaning of the low-pressure lines was done in the spring of 1997 with mixed results.

Repair Needs and Cost: The sewage will be piped to Poplar Point. Costs are included in the Poplar Point write-up.

## Electrical System

Description: The electric distribution system is owned by Carolina Power and Light Company and is served by four local offices - Pittsboro, Sanford, Cary and Raleigh. The majority of the distribution system is underground. The overhead power lines that serve each recreation area are not generally seen by the park visitor and are primary lines that serve power to outside customers. Three are approximately 85 different meters within the parks.

Current Conditions: All the electrical systems are in good shape and are maintained by the power company.

Repair Needs: A short section of overhead power line and the disconnect switching components are owned by the Division of Parks and Recreation. Ownership should be turned over to the power company.

Repair Cost: Unknown

## Telephone System

Description: The phone system is owned by two different phone companies. The park areas on the eastern side of Jordan Lake are owned by Southern Bell located in Cary, NC. The park areas on the western shoreline are served by Carolina Telephone and Telegraph located in Pittsboro, NC.

Current Conditions: The phone systems are in good condition and are maintained by the phone companies.

Repair Needs: An additional phone line is needed at the maintenance area.

Repair Cost: Additional monthly charge of \$30/month.

## Road Inventory

### BACKGROUND

The Institute for Transportation Research and Education (ITRE) study in March 1990 inventoried Jordan Lake roads and parking lots. There are 30.53 miles of paved road, 4.80 miles of unpaved road, 132,874 square yards of paved parking lots and 4,862 square yards of unpaved parking lots. The study included recreation areas at Crosswinds Boat Ramp, Ebenezer Church, Parker's Creek and Poplar Point. Since 1990, recreation areas at Crosswinds Campground, New Hope Overlook and Roberson Creek have been constructed. Roads at these facilities have been measured and are included in the above mentioned totals.

### CROSSWINDS BOAT RAMP ROADS

Description: Roads consist of entrance road to day-use boat launch area and parking lot. There are .47 miles of paved roads, 18,400 square yards of paved parking lots and 1,444 square yards of unpaved parking lots. The main roads are 22' wide with 4' shoulders. The roadway and parking lots have 1-1/2 inches of I-2 pavement with an 8-inch stone base. There are 124 boat and vehicle spaces.

Current Conditions: The roads were constructed in 1982 and are in fair to poor condition.

Repair Needs: (1) Crack sealing, parking lot striping and centerline striping is needed. (2) Spray weeds in parking lot. (3) Clean parking lot of debris and sand.

Repair Cost: (1) Striping: \$1,200; Patching: Funds from annual NCDOT patching budget - \$5,000 (2) Spray weeds: \$500 (3) Clean parking lot: \$1,000

### CROSSWINDS CAMPGROUND ROADS

Description: Roads consist of entrance road to three different camping areas (A, B and C) and to the boat launch area. The roadway system has 4.05 miles of paved roads, 4,397 square yards of paved parking lots, .02 miles of unpaved roads and 100 square yards of unpaved parking lots. The main roads are 18' wide with 5' shoulders. The one-way camping roads are 12' wide with 3' shoulders. The roads and parking lot have 2-1/2" of I-1 pavement and an 8" stone base. There are 56 vehicle parking spaces and 28 boat and vehicle spaces.

Current Conditions: The roads were constructed in 1993 and are in good shape.

Repair Needs: (1) Centerline stripe needs to be double yellow line. (2) Several drainage problems on camping loop roads. (3) Minor patching.

Repair Cost: (1) Restriping 2 miles @ \$500/mile = \$1,000 (2) Drainage improvements = \$5,000

## EBENEZER CHURCH RECREATION AREA ROADS

Description: The roads consist of the entrance road to the day-use swimming area parking lot road, family picnic area road, group picnic area road, boat ramp road and the boat entrance road. The roadway system has 2.98 miles of paved road and 21,886 square yards of paved parking lots. The main roads are 20' wide with 6' shoulders. The picnic roads are 18' wide with 5' shoulders. The road and parking lot has 1-1/2" of I-2 pavement with 8" of ABC stone. There are 231 swimming area parking spaces, 150 picnic area spaces, and 155 boat and vehicle spaces.

Current Conditions: The roads were resurfaced in 1989. Striping of the centerline was done in 1996. The roads and parking lots are in good shape.

Repair Needs: (1) Minor patching is needed. (2) Add turning lane at SR1008 by NCDOT.

Repair Cost: (1) Funds from the annual NCDOT patching budget of \$5,000. (2) Turning lane cost: \$8,000

## NEW HOPE OVERLOOK ROADS

Description: The roadway consists of the entrance road to the day-use boat ramp area, group camp road and spillway road. The roadway system has .76 miles of paved road, 1.9 miles of unpaved roads, 18,383 square yards of asphalt parking lots and 1,200 square yards of unpaved parking lots. The main roads are 20' wide with 4' shoulders, camping roads are 18' wide with 3' shoulders. The paved roadways have 2" of I-2 asphalt with an 8" stone base. The parking lot has 2" of I-2 asphalt surface with a 7" stone base. The gravel roads have a 6" stone base. There is a total of 203 boat and vehicle spaces within this area.

Current Conditions: The roads were constructed in 1994 and are in good shape.

Repair Needs: Quarterly grading under the NCDOT Road Agreement.

Repair Cost: Annual road scraping budget of \$2,000

## POPLAR POINT ROADS

Description: The roads consist of a short entrance road that connects to 8 different camping loops. There are also roads that serve the boat ramp, swimming beach and wastewater treatment plant. The roadway system has 10.03 miles of paved roads, 1.2 miles of unpaved road, 15,839 square yards of paved parking lots and 150 square yards of unpaved parking lots. The main roads are 19' wide, camping roads are 18' wide and one-way camping loops are 12' wide. The shoulder widths are 5' to 6' wide. The paved road and parking lot has 1 1-1/2" I-2 asphalt surface with an 8" stone base. There are 74 car and trailer spaces and 80 car spaces.

Current Conditions: The roads and parking lots were constructed in 1990 and are in good shape.

Repair Needs: (1) All parking lots need restriping. (2) The outside turning lane needs to be constructed from the park entrance station to the existing state road (SR 1008). (3) 200' turning lane needs construction on SR 1008 by NCDOT. (4) Pave the access road to Poplar Point Wastewater Treatment Plant. Add 2 crossline pipes. Pave 3 vehicle parking lots. (5) Minor drainage problems throughout the campgrounds.

Repair Cost: (1) Restripe parking spaces: \$1,500 (2) Addition of turning lane: 600 linear feet @ \$50/l.f. = \$30,000 (3) Turning lane widening on ST 1008: 200 linear feet @ \$50/l.f. = \$10,000 (4) Pave access road to Wastewater Treatment Plant: 1,500 square yards @ \$15/syd = \$22,500 (5) Drainage problems: \$5,000; Total = \$69,000

## PARKER'S CREEK ROADS

Description: The roadway consists of the entrance road to the boat ramp, camping loop roads to 5 camping loops, picnic roads, swim beach road, water treatment road and the pump house road. There are 6.76 miles of paved road, .87 miles of unpaved road, and 10,739 square yards of paved parking lots. The main roads are 19' wide with 6' shoulders. The camping roads are 18' wide with 4' to 6' shoulders. Single lane road widths are 12'. The roadway has 1-1/2" of I-2 pavement with a 9" stone base. The parking lots have 1-1/2" of I-2 with a 6" base. There is a total of 111 parking spaces located mainly at the swimming area parking lot.

Current Conditions: The roads were constructed in 1985 and are in fair to good shape. The Corps of Engineers completed a major patching contract in 1994.

Repair Needs: (1) Re-stripe swim beach parking lot. (2) Minor patching and shoulder widening. (3) Minor drainage work in camping loops. (4) Request NCDOT to extend turning lane.

Repair Cost: (1) Striping cost is \$1,200. (2) The annual NCDOT patching and road budget should be adequate to address drainage and patching needs. (3) Drainage work: \$5,000

## ROBERSON CREEK ROADS

Description: The roads consist of the entrance road to the canoe launch parking and boat ramp parking. The road system includes .4 miles of paved roads, .85 miles of unpaved roads, 4,622 square yards of paved parking lots and 1,471 square yards of unpaved parking lots. The main road is 20' wide with 3' shoulders. The gravel road to the canoe launch is 12' wide with 2' shoulders. The paved roads have a 2" I-2 asphalt surface course with a 7" stone base. The gravel road has a 6" stone base. There are approximately 45 spaces at the canoe launch area and 120 boat and vehicle spaces at the paved boat launch area.

Current Conditions: The roads were constructed in 1994 and are in good shape. There is a high rutting problem associated with the gravel road to the canoe launch area due to the steep grades.

Repair Needs: (1) Pave the Roberson Creek canoe launch road and parking lots. (2) Add 150' of guardrail. (3) Reseed road slopes at paved boat launch parking area. (4) Correct drainage problems near canoe launch parking.

Repair Cost: (1) Canoe launch road and parking lot paving: 10,000 square yards @ \$10/syd = \$100,000 (2) Guardrail: 150 linear feet @ \$15/lft = \$2,250 (3) Landscaping: \$5,000 (4) Drainage: \$3,000; TOTAL = \$110,250

## SEAFORTH RECREATION AREA ROADS

Description: The roads consist of an entrance road to the day-use swim beach and picnic area parking lot, boat ramp road and parking lot, roads to the spray fields and well houses. The roadway has 1.67 miles of paved roads, .21 miles of unpaved roads, 22,373 square yards of paved parking lots and 100 square yards of unpaved parking lots. The main road is 20' wide with 5' shoulders. The roadway has a 2" I-2 pavement with an 8" stone base. The parking lot has 2" of I-2 pavement with a 6" base. There are 380 parking spaces at the swim beach and 165 spaces for boats and vehicles.

Current Conditions: The roads and parking areas were constructed in 1991 and are in good shape.

Repair Needs: (1) Minor drainage problems in the day-use parking area due to shoulder build up around parking bumpers. (2) Restripe all parking spaces. (3) Widen turning lane at ticket booth.

Repair Cost: (1) Drainage improvements: \$1,000 (2) Restriping: \$5,450 (3) Widen turning lane: \$2,000

## STATE ADMINISTRATION AND MAINTENANCE AREA ROADS

Description: The roads consist of an entrance road to the main office complex, maintenance area, boat ramp road, well house and ranger residence road. The roadway consists of .61 miles of paved roads, .05 miles of unpaved roads, 6,849 square yards of paved lots and no unpaved parking lots. The main roads are 20' wide with 5' shoulders. The roadway and the parking lots have a 2" layer of I-2 asphalt with an 8" stone base. There are 35 spaces at the office and 40 spaces at the maintenance area.

Current Conditions: The roads and parking areas were constructed in 1989 and are in good shape.

Repair Needs: (1) Office parking lot spaces are 12' wide and need to be reduced to 9-1/2' to increase parking spaces. Restripe the parking lot. (2) Expand existing parking lot width to accommodate additional staff parking.

Repair Cost: (1) Office parking lot restriping: \$500; (2) Office expansion: 500 square yards @ \$25/syd = \$12,500;      TOTAL: \$13,000

## VISTA POINT ROADS

Description: The roads consist of the entrance road to the boat ramp area, picnic area road, RV camping road, group camp road and waste treatment road. The roadway system has 1.93 miles of paved roads, .57 miles of unpaved roads, 9,386 square yards of paved parking lot and 397 square yards of unpaved parking lot. The entrance road is 19' wide with 6' shoulders. The roadway and parking lots have 1-1/2" of I-2 asphalt with an 8" stone base. There are 80 vehicle spaces and 100 boat and vehicle spaces.

Current Conditions: The roads were constructed in 1985 and are in fair to good shape.

Repair Needs: (1) Minor drainage needs in the RV camping and group camp sites. (2) Additional stone needed in RV sites. (3) Restripe parking spaces.

Repair Cost: (1) Correct drainage: \$1,000; (2) Additional stone: 100 tons @ \$12/ton = \$1,200; (3) Restripe 180 spaces: \$1,800;      TOTAL: \$4,800

## MAJOR CAPITAL IMPROVEMENT PROJECT PRIORITIES

The *Master Plan for Development and Management* for the Jordan Reservoir Project provides the framework for overall planning and includes concept plans, cost estimates, and recommendations. It addresses area growth and corresponding recreational demand as well as the optimum development to accommodate demand. The plan, developed by the U.S. Army Corps of Engineers and adopted in 1977, is currently under revision by the Corps.

Using this master plan, several years ago the Division of Parks and Recreation identified and detailed capital improvement projects that could be constructed. These projects were evaluated and ranked, thus creating a priority list of capital improvement projects for Jordan Lake. These projects were combined with projects evaluated and ranked for other state park units, resulting in a priority list of capital improvement projects for the state parks system.

Capital improvement project ranking are based upon objectives such as promoting public health, protecting natural resources, enhancing environmental education, increasing public accessibility, and improving the park's appearance.

As part of the general management plan process, the previously developed list of capital improvement projects — the Original Project Priority List — were reviewed, revised, or dropped, and new projects developed. The general management plan evaluation team considered factors such as changes in environmental regulations, the condition of existing facilities, natural heritage values, changes in recreation demand, visitor safety considerations, legislative and lease

requirements, new development adjacent to the park, operational needs, and current recreation demand.

This review of the Original Project Priority List of capital improvement projects resulted in changes, additions, and deletions to capital improvement proposals. The Original Project Priority List follows, along with a description of the changes and reasons for those changes and additions. The Revised Project Priority List is then shown.

#### Original Project Priority List

RANK	DESCRIPTION	PROJECT SCORE	TOTAL COSTS
1	Vista Point Turnaround and Fee Station	655	\$ 74,982
2	(2) Picnic Shelters at Ebenezer Point	641	128,686
3	Residences at Crosswinds and Vista Point	530	288,253
4	23 Rental Cabins at Parkers Creek	530	2,080,868
5	Community Building	not ranked	479,752
6	Residences at Parkers Creek and Poplar Point	not ranked	279,053
7	Seasonal Barracks	not ranked	352,242
8	Staff Housing Compound	not ranked	765,780
	<b>TOTAL</b>		<b>\$ 4,449,616</b>

#### Recommended Changes to the Original Project Priority List

Of the eight projects shown in the Original Project Priority List, only project #4, the development of 23 rental cabins at Parkers Creek, has been deleted from the five-year plan. Future development may be possible if public demand for such cabins grows; however, the previously proposed site at Parker's Creek is not a suitable site for such development. There is not enough room for the cabins by the water, and the area is already congested with its four camping loops (250 sites) and six group campsites, boat ramp, picnic areas, parking, and swimming beach.

Before identifying a site or sites for cabin development at Jordan Lake, the Division needs to study alternatives and determine what type of cabin development is desirable. Items to be considered include financial considerations, staffing and operational needs, size of cabins, number of cabins, amenities, and seasonal or year-round use. Should individual or group cabins or both be built? Should the cabins be operated in-house or by a concessionaire? Should the state build the cabins or lease an area for cabins to be privately built? Once the cabin concept and scope are developed,

a site or sites at both Falls Lake and Jordan Lake will be identified. These actions are to be accomplished within the next five years.

The remaining proposed capital improvements contained in the original project priority list are included in the revised list of projects. In some cases, the scope of work has been changed or expanded. For example, project #2, construction of two picnic shelters at Ebenezer Point has been expanded to include construction of a shelter at New Hope. The division should be able to obtain a better price by constructing the needed shelters at the same time.

### Revised Project Priority List

In addition to changing or expanding the original project priority list, new projects are proposed. A list and description of these revised and new projects follow. Maps showing the locations of the proposed facilities are found at the end of this chapter. (Figures VII-1 through Figures VII-10)

RANK	DESCRIPTION	PROJECT SCORE	TOTAL COSTS
1	Crosswinds Beach & Large Shelter Additions	752	\$1,130,376
2	Residences at CRWI, NEHO, VIPO, POPO, PACR (6 total)	722	995,661
3	Jordan Utility Improvements	682	389,362
3	Vista Point RV Campground Improvements	681	218,279
9	(2) Shelters at Ebenezer, (1) at New Hope	679	249,328
6	Vista Point Fee Station and Swimming Beach	601	636,418
7	Parker Creek I&E Shelter Conversion	629	228,144
8	Trails Improvements	628	103,942
9	Poplar Point Access Lane Addition	620	123,431
13	Community Building at Ebenezer Point	613	793,950
11	Observation Decks at Seaforth (2)	610	98,485
12	Entry Porches on Washhouses/Toilets at Jordan	601	233,870
18	Beach Improvements at SEFO, POPO, EBPO	597	544,269
11	Seasonal Barracks	588	1,018,112
15	Pier Construction at NEHO, SEFO, ROCR	566	617,159
16	Enlarge Administrative Office at Jordan Lake	552	490,089
17	Maintenance Area Building Additions	538	297,211
18	Parker Creek Multi-Purpose Court, H.C. Access	541	59,767
	TOTAL		\$ 8,227,863

1. Crosswinds Beach and Large Shelter Additions (\$1,130,376)

Additional swimming areas at Jordan Lake are needed to meet demand and alleviate crowding and parking problems at existing beaches. In addition, a large group shelter is needed. Crosswinds already has much of the infrastructure in place to accommodate a large shelter and swimming, and therefore is well-suited for these additions. In addition to construction of the beach and shelter, this new project will include improvements to the dock, toilet building, and sewer system. The existing toilet building is in good condition and should be able to accommodate the additional use by swim area visitors. It will need renovating, however, to add three dressing rooms on each side of the building and outside showers. A new fee station is also included.

2. Residences at Crosswinds (1), Vista Point (1), Poplar Point (1), New Hope (1), and Parker's Creek (2) (\$995,661)

Rangers housed within the park are better able to provide protection to park visitors, resources, and facilities. This revised project combines construction of six residences into one project and updates costs to reflect current market conditions.

3. Jordan Utility Improvements (\$389,362)

This new project will complete needed repairs and improvements noted earlier in this chapter. Improvements will be made to sewer, electrical, and water systems throughout the park.

4. Vista Point RV Campground Improvements (\$218,279)

The existing group RV campground area has an undesirable slope, and vehicles are not level when parked. This project would bring in fill dirt and level and terrace the loops as needed. Also included is the replacement of 1,000 feet of water line, construction of an eight-table shelter, and picnic tables.

5. Two Shelters at Ebenezer point, One at New Hope (\$249,328)

This project expands the original project that called for construction of two shelters at Ebenezer by adding a similar shelter needed at the nearby New Hope Overlook.

6. Vista Point Fee Station and Swimming Beach (\$636,418)

This project adds the construction of a new beach, a picnic shelter and picnic sites, bathhouse improvements, and parking lot improvements to the old fee station project. A new swimming area and additional picnic facilities are needed to meet existing demand.

7. Parker's Creek Interpretation and Education Shelter Conversion (\$228,144)

The 12-table picnic shelter at Parker's Creek is rarely reserved for picnics because of its

location away from the water. It is, however, in an excellent location for interpretation and education activities, particularly aquatic ones, since there is a small pond along a nearby trail. While the shelter is not suited for a primary I & E center for the park, it is an appropriate site for an auxiliary function. The road to the structure has a separate gate, providing good control over access to the site.

This renovation project would enclose the structure and subdivide the interior into a workroom, an office/storage room, entry area, and a classroom with cabinets and sinks. No renovation of existing toilet rooms is required. Floor, structure, plumbing, and roof are already in place. Bus parking will be added.

8. Trail Improvements (\$103,942)

This project will provide an accessible trail with a parking area near the administrative office building south of US 64. Trail head signs and interpretive exhibits are included.

9. Poplar Point Access Lane Addition (\$123,431)

Poplar point is a popular camping area. At peak visitor use times, traffic volumes are so high that traffic backs up onto SR 1008, creating unsafe driving conditions. This project will provide an additional lane for cars and reduce entry time by those already registered.

10. Community Building at Ebenezer Point (\$793,950)

This project includes construction of a standard community building with restrooms for year-round rental use. It will be located near the water. The project includes clearing, road extension, parking, tables and chairs, and utilities. The building will also be used for interpretation and education and staff training.

11. Observation Decks at Seaforth (\$98,485)

Two observation decks will be built at Seaforth. One observation deck will be near the old pond on the north side of the beach. The other will be built at the south end of the peninsula, and access to it will be improved by constructing a raised dirt fill causeway almost to the end of the land point. A boardwalk will then extend 150 feet out into the lake.

The decks will be used for sightseeing and wildlife observation. They will offer new opportunities for persons with disabilities.

12. Entry Porches on Washhouses and Toilets (\$233,870)

Covered entrances are needed for the doorways of 15 buildings to protect the siding on the front. Premature siding failures have occurred on most of these buildings, and a detail change is required to prevent continued loss and replacement.

**13. Beach Improvements at Seaforth, Poplar Point, and Ebenezer Point (\$544,269)**

Sand depletion and shoreline erosion have necessitated this project. The beaches, which are now largely without sand, are hard, rough and unsightly, and the clay discolors clothing. This project would replenish the sand on a one-time basis. Thereafter, maintenance can catch up with continual sand migration down the beaches and into the water. The project also includes some erosion control, landscaping, and handicapped access to the beach.

**14. Seasonal Barracks (\$1,018,112)**

Park management believes it would be easier to employ and retain seasonal workers, particularly college students over the summer, if some housing were available. This project calls for construction of a 5,000-square-foot barracks. An access road and parking, utilities, and furnishings are included. The barracks could be used in the off-season for Division training purposes as well as temporary housing for permanent staff. The barracks would be located behind the maintenance area.

**15. Pier Construction at New Hope, Seaforth, and Roberson Creek (\$617,159)**

This project includes construction of three piers, one each at New Hope, Seaforth, and Roberson Creek. Handicapped access to each of the piers will be provided. Parking at Seaforth and a canoe launch at Roberson Creek are also included. The pier will provide much-needed accessible fishing piers.

**16. Enlarge the Administrative Office (\$490,089)**

Since the administrative office was constructed, the number of Jordan Lake staff has increased greatly as new recreation areas have opened, and visitation has jumped. The current space is too small. Staff often share desks, and the conference room serves as a break/lunch room. There is not enough space to adequately hold lost-and-found items, and no good facilities are available for I & E storage. This project calls for enlarging the existing office, adding office space, larger conference facilities, expanding the break/lunch/kitchen area, and adding storage.

**17. Maintenance Area Building Additions (\$297,211)**

Jordan Lake has greater maintenance needs now that new recreation areas have opened and visitation has increased. There are more vehicles to be stored and serviced, as well as other equipment. Tires and auto parts storage is too crowded. This project includes an addition to the vehicle and equipment storage building and an addition to the auto shop.

**18. Parker's Creek Multi-Purpose Court and Beach Handicap Access (\$59,767)**

This project calls for replacement of the concrete slab play courts with a sand multi-purpose game court for use by groups and more consistent with family-oriented or large group use. The project will also fix the handicap access ramp at the beach.

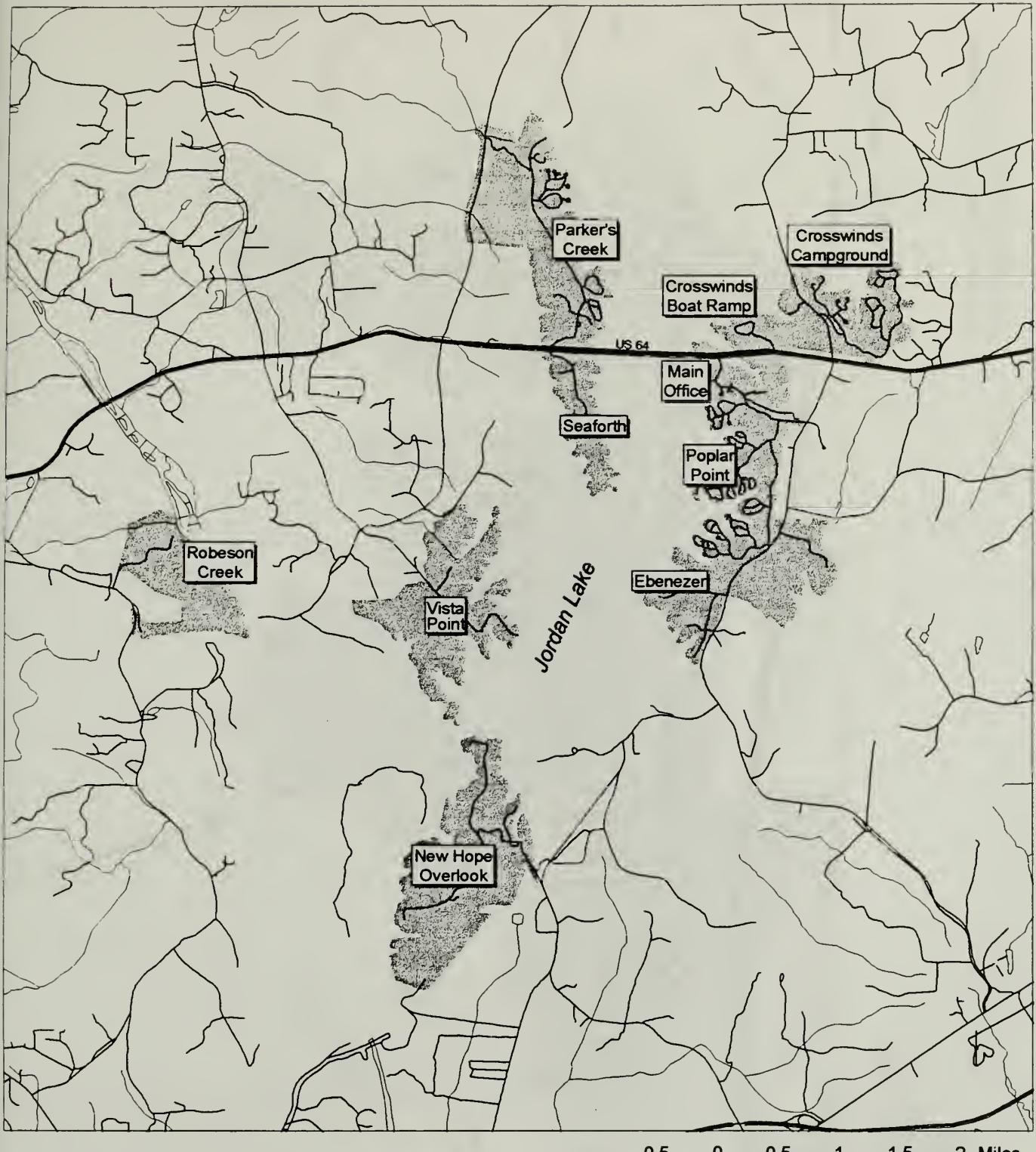


Fig. VII-1. Jordan Lake  
State Recreation Area

■ State Recreation Area

Jordan Lake

Water

Roads

US

NC

Other

N

Division of Parks and Recreation  
Resource Management Program

Fig. VII-2. Map Legend  
for area maps.

 State Recreation Area

Facilities

-  Amphitheater
-  Misc. Building
-  Boat Ramp
-  Fishing Pier
-  Picnic Shelter
-  Staff Residence
-  Comfort Station
-  Dumpstation
-  Shower
-  Swimming Area
-  Entrance Station
-  Tot Lot
-  Multi-purpose Court
-  Picnic Area
-  Park Office
-  Maintance Area
-  Seasonal Barracks
-  Canoe Launch
-  Camp Site

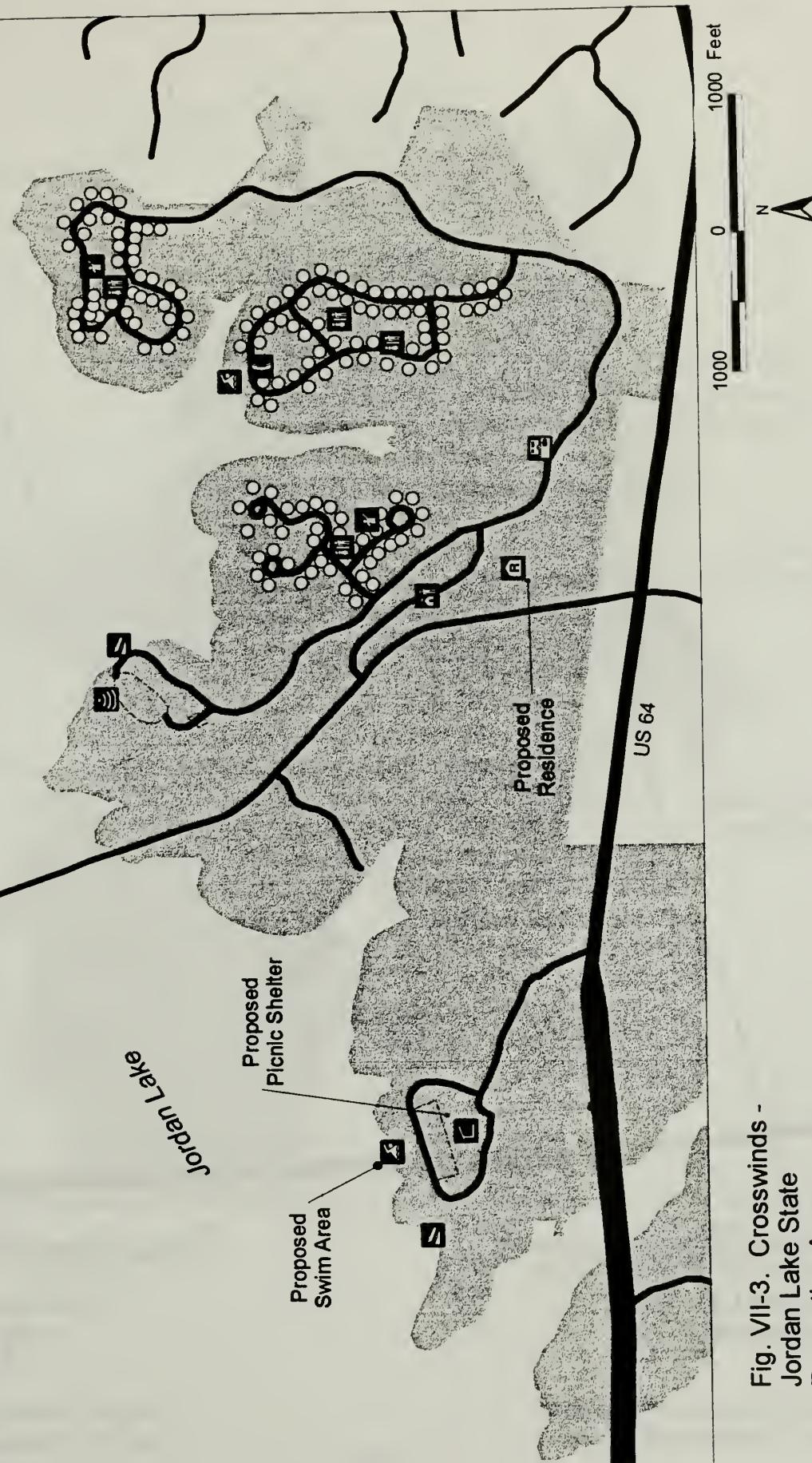
Water

 Streams

Roads

-  US
-  NC
-  Other
-  trails
-  parking

Fig. VII-3. Crosswinds -  
Jordan Lake State  
Recreation Area



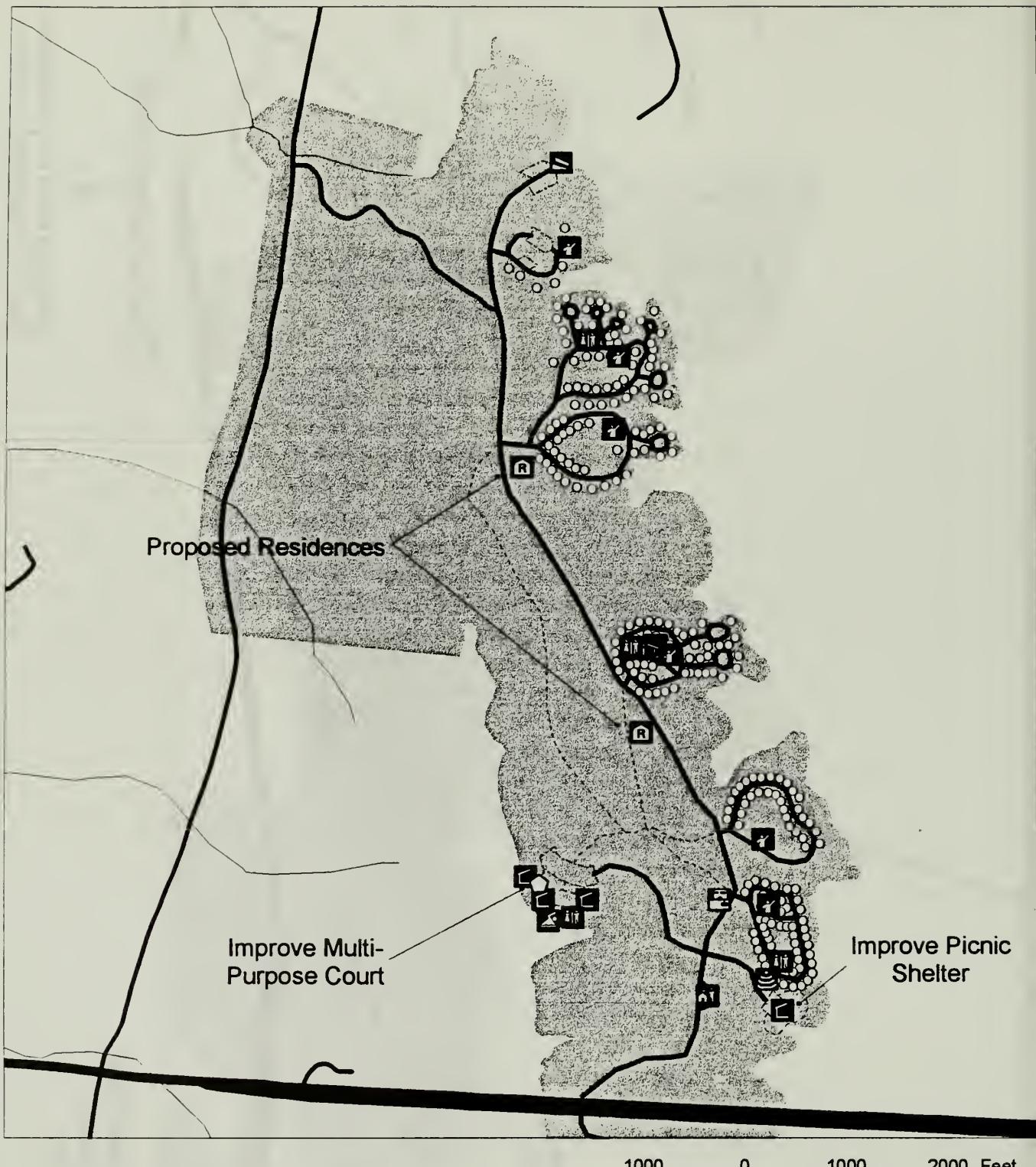


Fig. VII-4. Parkers Creek -  
Jordan Lake State  
Recreation Area

Division of Parks and Recreation  
Resource Management Program

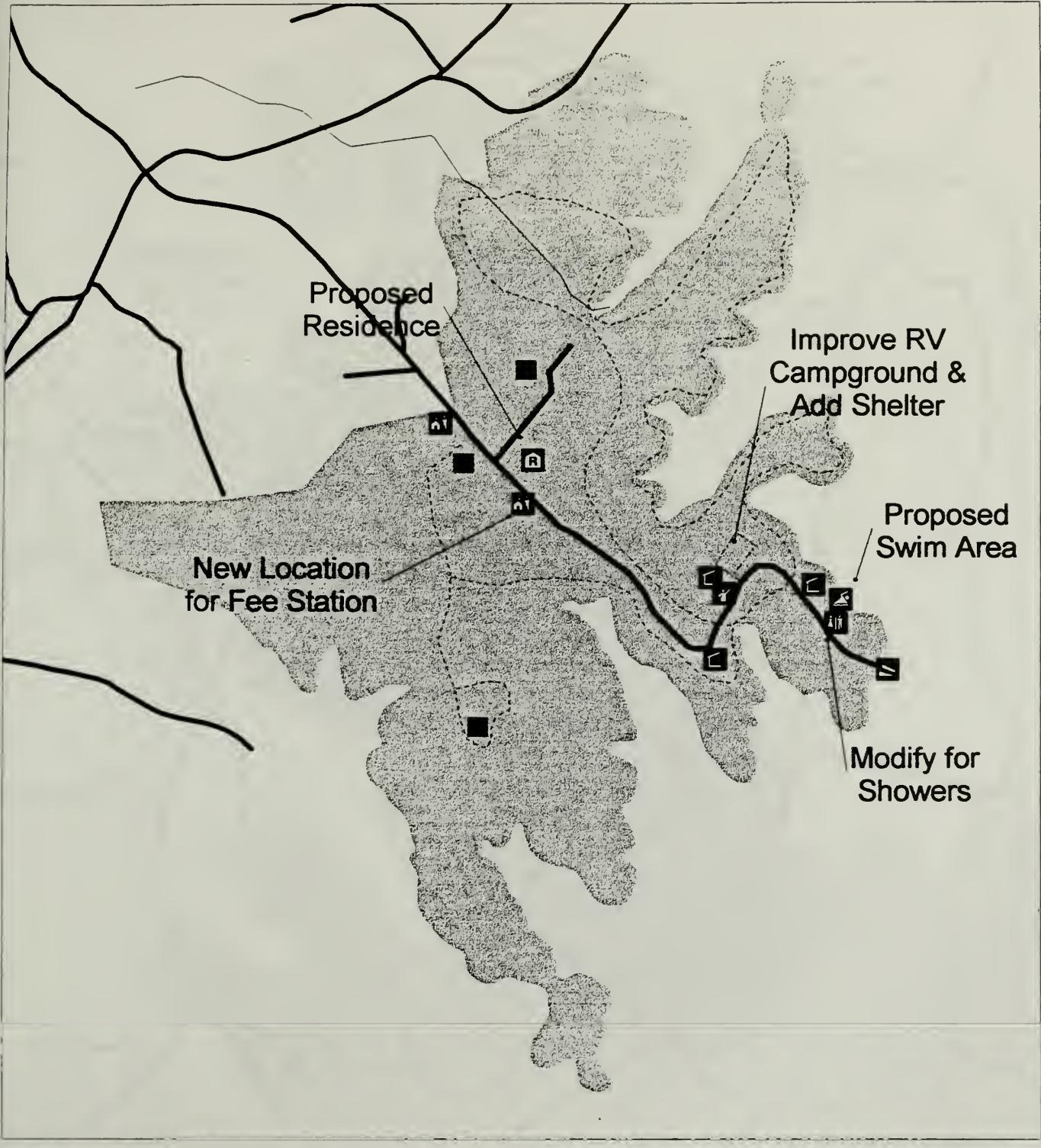


Fig. VII-5. Vista Point -  
Jordan Lake State  
Recreation Area

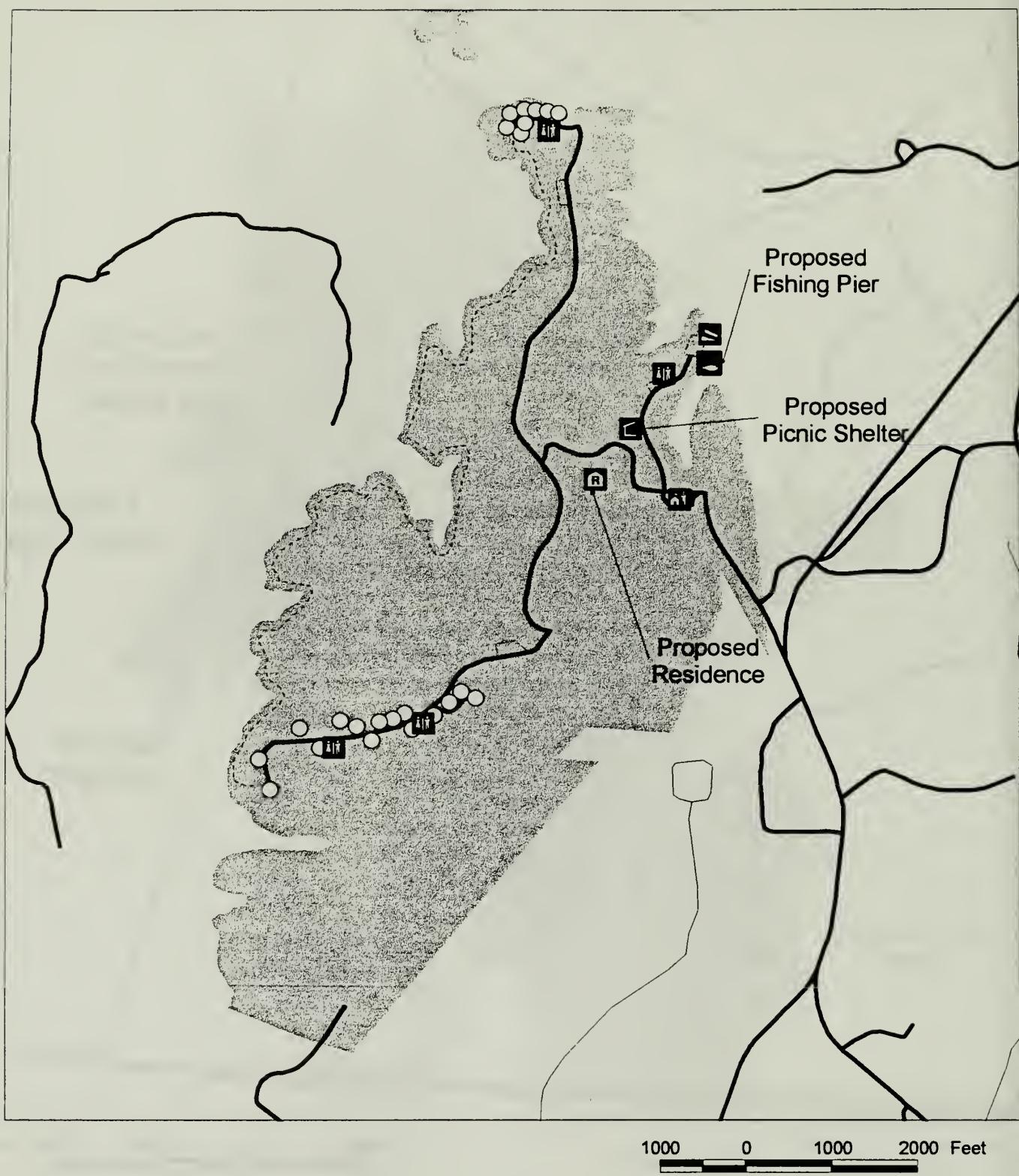


Fig. VII-6. New Hope Overlook -  
Jordan Lake State Recreation Area



Fig. VII-7. Poplar Point -  
Jordan Lake State  
Recreation Area

500 0 500 1000 Feet



Division of Parks and Recreation  
Resource Management Program



Fig. VII-8. Ebenezer -  
Jordan Lake State  
Recreation Area

Division of Parks and Recreation  
Resource Management Program

US 64

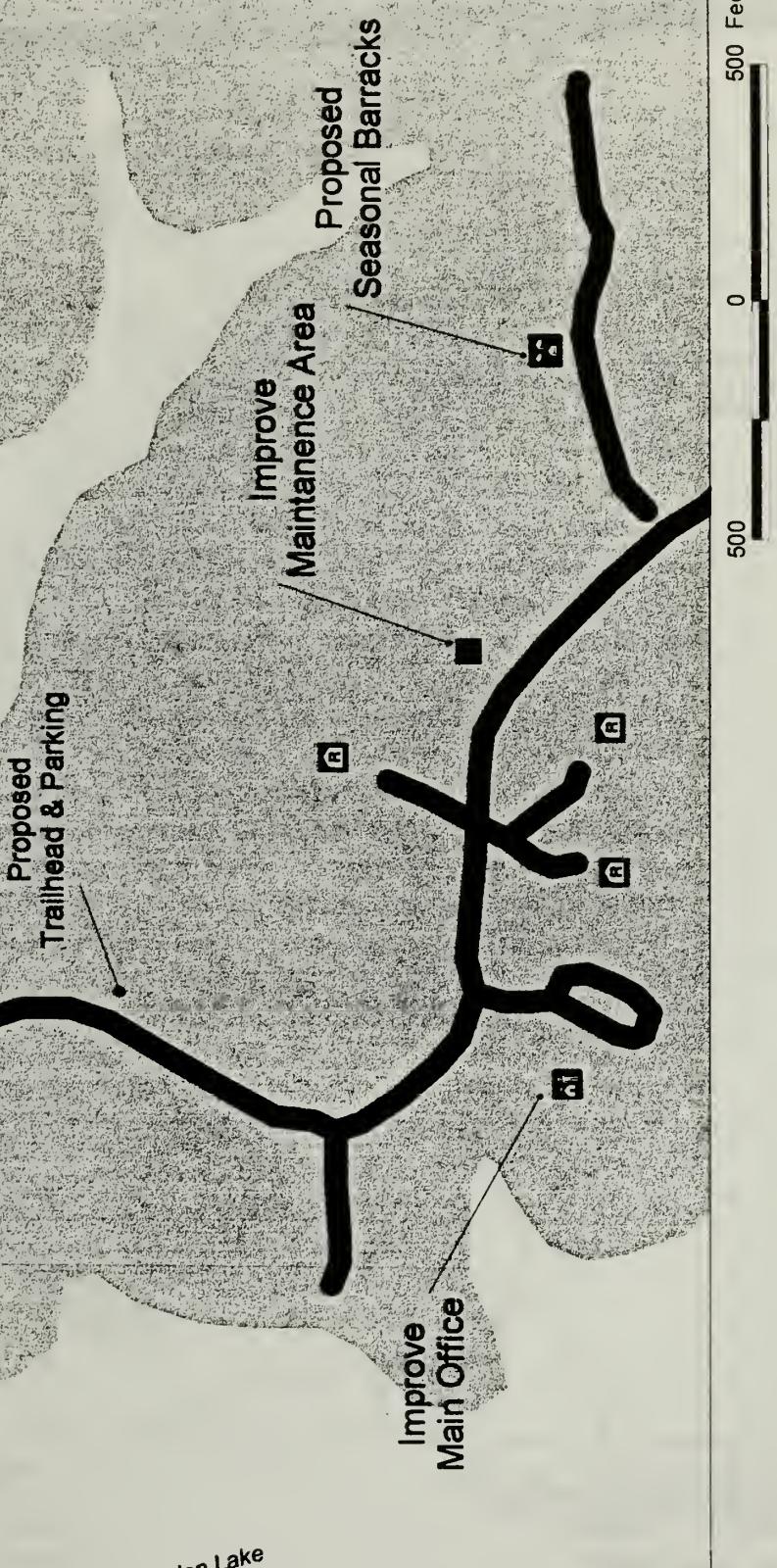


Fig. VII-9. Administrative Area -  
Jordan Lake State Recreation Area

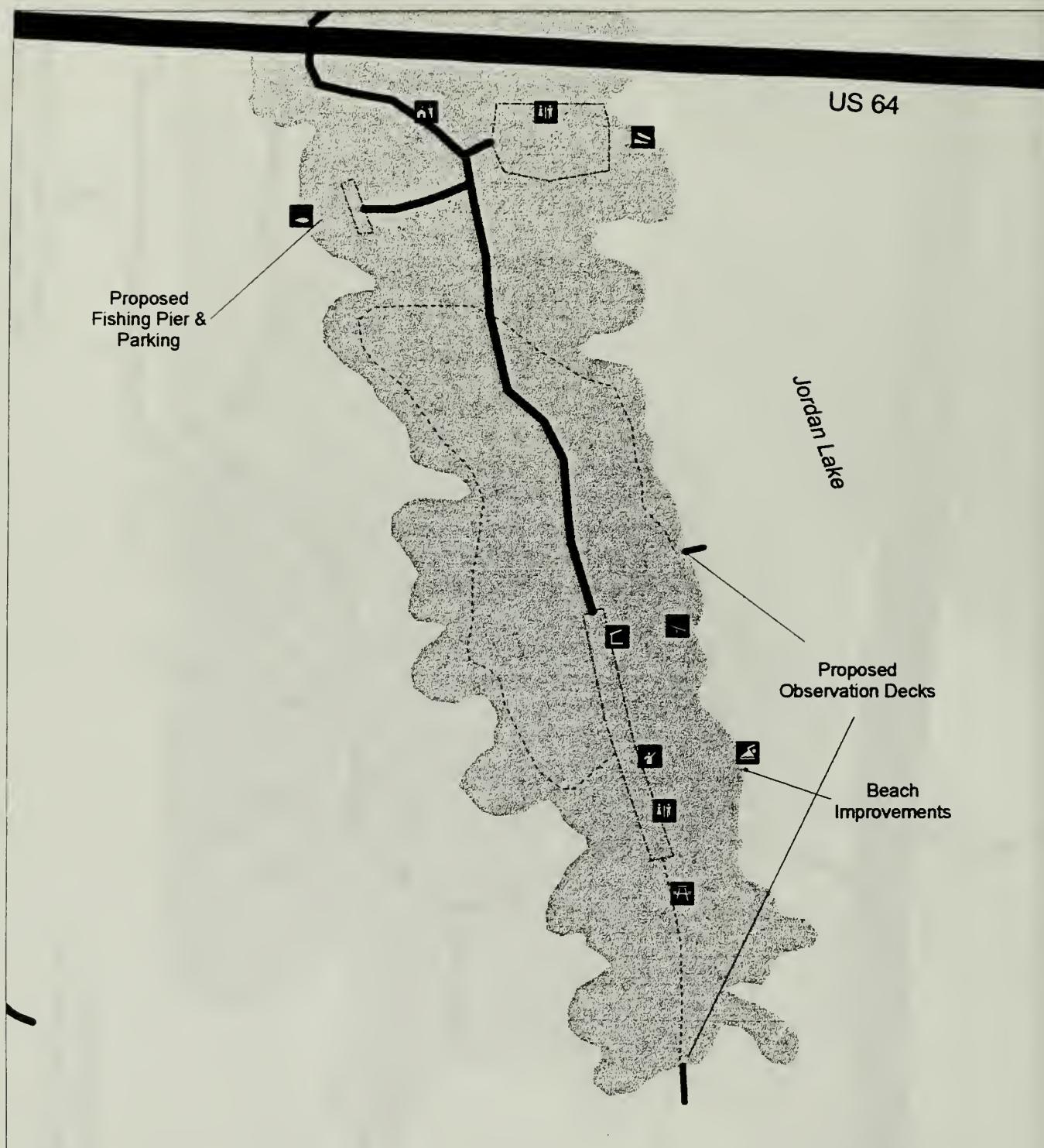


Fig. VII-10. Seaforth -  
Jordan Lake State  
Recreation Area

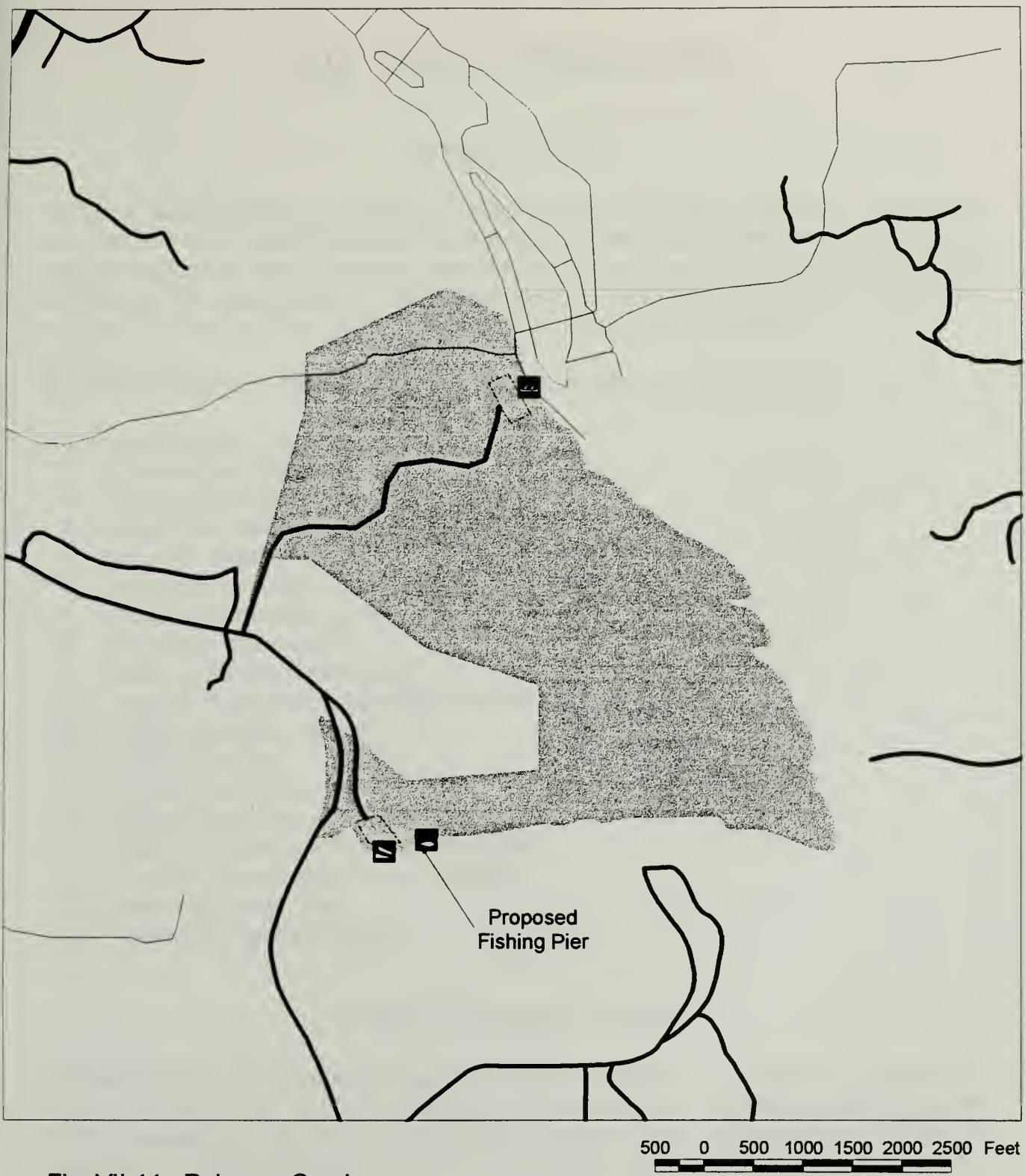


Fig. VII-11. Robeson Creek -  
Jordan Lake State Recreation  
Area



## **VIII. PARK OPERATIONS**

### **INTRODUCTION**

The major issues concerning Jordan Lake State Recreation Area were identified by Division of Parks and Recreation staff at the initiation of the general management plan process. The issues have been divided into three categories: natural resources (see Chapter VI), capital improvements (see Chapter VII), and operations. This chapter identifies park operations issues at Jordan Lake and makes recommendations for addressing them during the next five years.

Operations/management issues that are of significant concern at Jordan Lake are:

1. operating budget needs;
2. expanded gate hours;
3. boundary fencing/screening at Crosswinds;
4. underwater obstruction removal at swim areas;
5. better information road signs;
6. additional maintenance staff needed;
7. overall training needs assessment;
8. spray field maintenance;
9. mowing and yard maintenance
10. response to off-hour maintenance problems and emergencies;
11. camper registration system;
12. janitorial service;
13. expand and improve trails;
14. increases needed in seasonal staff wages;
15. additional ranger needed at Parker's Creek;
16. refreshment stand operations at beaches;
17. observation decks; and
18. Crosswinds Marina expansion.

### **OPERATING BUDGET NEEDS**

The current budget for operating and equipment needs is inadequate for effectively managing the Jordan Lake park areas. All park operations are affected by these shortages, including natural resource management, interpretation and education, public safety, and maintenance. There are approximately 90 structures in the park that need ongoing repair and maintenance, particularly as they age.

Improvements to structures are also needed, such as at the vehicle shop where rain can run in under the doors because there are no gutters. Mowing and yard maintenance equipment need to be kept in good order and repaired and replaced as needed. The shop needs a dust-collection system, as well as improved ventilation. Paper products are constantly needed at restrooms. Needs are many

and varied.

Toilet buildings and washhouses in the park are not well lighted. Improved lighting is needed for safety, aesthetics, and the convenience of park visitors. Traditional two-tube fluorescent light fixtures would cost about \$300 each, installed. Small but effective solar tube skylights would cost approximately \$360 each, installed, a slightly higher initial cost. Solar tubes should have no further operational costs, however, and should therefore result in long-term savings.

The size of the park's utility systems and physical plant and the heavy use from park visitors combine to increase probabilities of service problems. Proper equipment is needed for quick service and repairs. In other cases, job time can be reduced by having proper equipment. A separate repeater system is needed for maintenance communication purposes; during periods of heavy park use, the existing system is crowded.

The budget at Jordan Lake is related to estimated receipts. From 1988 through 1995, revenues have varied between 31.6 and 43 percent of expenditures. In 1994 and 1995, expenditures were \$1.45 million each year. This amount needs increasing.

### **Recommendations**

Entrance fee and facility-use fees should be increased to provide additional operational funds. The following list of equipment should be purchased for use at the park.

<u>Equipment Needs</u>	<u>Amount Requested</u>
Torch (acetylene)	\$ 3,000
4" Heavy Duty Grinder	1,000
7" Heavy Duty Grinder	1,500
Riding Mowers w/72" Deck (2 @ \$8,000)	16,000
Trailer (9-Ton)	6,000
Electric Fault Detector	5,500
Large Sump Pump (2 @ \$850)	1,700
Paint Sprayer (2 @ \$700)	1,400
Auger for Tractor	1,500
Flail Mower 74" Deck (2 @ \$3,600)	7,200
Radio and Repeater System for Maintenance	4,000
Air Hose Reel for Ceiling	600
Tiller	1,000
Continuous Purchase of Vehicles for Replacement: Yearly Average	70,000
Heavy Duty Generator for Maintenance (3 @ \$800)	2,400
Mounted Lights (3 @ \$600)	1,800
Heavy-Duty Stock Ladder	650
Hose Reel Lubrication Grease System	6,000
Heavy Duty Tractor w/Backhoe and Front End Loader	60,000
Large Truck 32,000 lb. GVWR	42,000

Large Kilowatt Generator for Backup at Office	5,000
Purchase of Replacement Grills and Picnic Tables	7,500
Solar Tubes for Toilet Building and Washhouses (2 per toilet building & 4 per washhouse = 94 @ \$360)	33,840
Electric Stove for Office	650
<b>TOTAL OF EQUIPMENT RECOMMENDED FOR PURCHASE:</b>	<b>\$280,240</b>

### **EXPANDED GATE HOURS**

There is some public demand for expanded gate hours at Jordan Lake. Sometimes campers are unable to arrive before gates are locked or need to leave during the night. Illness, injury, emergency, convenience, work requirements, and other reasons may cause campers to want to go and come after gates are closed.

Past efforts to expand gate hours have not gone well. A 24-hour gate at Parkers Creek was tried in the mid-1980's. The expanded hours put a tremendous burden on park staff and increased the number of camper complaints caused by late-night arrivals, abuse of alcohol, excessive noise, and theft of camping equipment. The problems caused the 24-hour gate trial to be dropped.

In 1987, a policy of giving out the gate combination to campers at Parkers Creek was tried. Misuse of the combination resulted. Rangers made trips to the campground at night to escort out drunks and non-campers let in by campers. Often, campers just left the gate open. After a couple of months, the policy was judged a failure and dropped.

Campground hosts do not support expanded gate hours. Both hosts and the majority of campers appreciate the security of camping in a gated facility.

Twenty-four-hour access would require additional staff. Two rangers would be required to transport to Pittsboro and process anyone arrested for DWI, larceny, vandalism, assault, etc., taking the rangers away from the park for up to two hours. Staff working at night would not be available for covering day-use areas, which receive heavy visitation.

In spite of past problems with 24-hour campground access, some additional attempts to serve campers with legitimate needs to come and go after normal hours are needed.

### **Recommendations**

Expand gate hours at Jordan Lake. The expanded schedule would be as follows:

May - August	8 a.m. to 9 p.m.
April, September & October	8 a.m. to 8 p.m.
March	8 a.m. to 7 p.m.
November - February	8 a.m. to 6 p.m.

Direct campers with a need for coming and going after hours to the recreational vehicle campsites at Vista Point and issue the gate lock combination to these campers on a trail basis. College football fans, State Fair participants and spectators, exhibitors at functions in Raleigh, parents visiting families, persons seeking medical treatment at the Duke or UNC hospitals, and others have been directed to this campground since 1995. Issuing the lock combination may prove to be a reasonable approach to accommodate these campers. The smaller size of Vista Point will help prevent widespread abuse of the system and will leave the majority of campers secured in the gated campgrounds.

Operational goals for the camping facilities at Jordan Lake will need to be established. Should the park accommodate only people who camp for the purposes of enjoying the lake and its facilities and recreational opportunities? Should the park provide cheap housing for travelers, local workers, and others? During the next five years, an assessment of the success of the giving out of the gate combination at Vista Point will need to be determined. An analysis of the number of campers and number and type of complaints will need to be made. Options for additional 24-hour access areas, perhaps on interim gamelands or opening an existing loop, need to be explored.

### **BOUNDARY FENCING/SCREENING AT CROSSWINDS**

Country Estates Trailer Park is located along the southern park boundary at Crosswinds Campground, near camping area B and C. Several trailers are sited close to the boundary and are visible from the park road. In addition to the visual intrusion, there have been ongoing problems with kids on bicycles and ATV's entering the park across this boundary and riding in the park. Domestic cats and dogs also enter the park and bother visitors at their campsites. Occasionally, hunters have been spotted on park property, and some vandalism and dumping of trash has taken place.

The widening of US 64 has removed approximately 50 feet of woods and has increased the visibility of the highway to the Crosswinds Campground road, particularly when leaves are off the trees. Additionally, new development, which does not blend in with natural surroundings, has taken place only 20 feet from the park boundary. Vegetative screening would block the view and lessen noise.

### **Recommendations**

A chain link fence should be erected along the southern boundary to block the easy access to the Crosswinds Campground from the trailer park area. The fence should be long enough to dissuade people and animals from going around it. The fence would make the boundary obvious to those living outside the park, and the restricted access should result in a reduction of the problems now existing at this area. After initial fence installation, maintenance should be minimal, consisting of repairs needed due to vandalism and falling trees. Approximately 500 feet of vegetative screening should be planted along the Crosswinds Campground road to screen US 64 and development intrusion.

## **UNDERWATER OBSTRUCTION REMOVAL AT SWIM AREAS**

Occasionally, swimmers have stepped on and sometimes been injured by underwater obstructions. Staff attempt to find and remove any such obstructions.

### **Recommendation**

Annually inspect the swim areas prior to their opening and remove any obstructions found.

## **BETTER INFORMATION ROAD SIGNS**

Jordan Lake serves as a statewide recreational resource and a major state camping area. There is a need for additional directional signs leading to Jordan Lake as well as signs with more information. This is particularly true for NC 751, I-40, and I-440, where signs need to indicate camping. The Department of Transportation has stated that camping needs to be within 10 miles for such signs to be posted.

### **Recommendation**

Request in writing that the Department of Transportation consider adding camping to existing signs along major routes leading to Jordan Lake. Request that signs be added where staff think they are needed, and seek to have signs added at appropriate locations as new facilities are opened.

## **ADDITIONAL MAINTENANCE STAFF NEEDED**

Jordan Lake State Recreation Area is a large operating unit with operations spread out at 10 locations. There are not enough staff to adequately perform maintenance duties.

Help is needed for water and sewer operations. There are 35 lift stations within the park, each with two pumps. The lift stations should be checked twice a week between April and Labor Day. There are 15 wells and 10 hydropneumatic tanks, and six wastewater treatment plants with four spray irrigation and two low-pressure fields. The maintenance employee in charge of water and sewer operations should have certification in wastewater, spray irrigation, sewell, and low-pressure systems in order to properly run and supervise the operations.

Jordan Lake has extensive grounds that need mowing. Many of these areas, such as campsites, are not easily and quickly mowed by large equipment. Approximately 28 miles of road needs mowing on both shoulders.

The park must be kept going during the week and on weekends. General upkeep of 89 buildings is time-consuming. The park's 40 vehicles are currently maintained by the chief mechanic and a mechanic II. Additional help is needed to keep these vehicles and five tractors, six riding mowers, and many other small engines, such as push mowers and weed-eaters, in working order.

## **Recommendations**

Two additional maintenance mechanics and three employees for water and wastewater operations should be hired as soon as possible to improve park maintenance operations. Maintenance personnel should be added to coincide with the completion of new facilities.

## **OVERALL TRAINING NEEDS ASSESSMENT**

The issue of training needs assessment is not unique to Jordan Lake State Recreation Area. Operations evaluations previously conducted by the division included a specific assessment of training needs in all categories of operational duties.

Jordan Lake State Recreation Area has an extensive history of offering a wide variety of training opportunities for its employees, employees of other state parks and recreation areas, and others. The training needs include Basic Law Enforcement Training (BLET). BLET is required of each ranger and must be completed within the first 12 months of each ranger's career. It is the most demanding training in terms of time and fiscal resources. Other training needs include First Responder, CPR, S-130/S-190 Fire Behavior and Suppression, Fundamentals of Search and Rescue, Community CPR, Expandable Baton, OC Spray, and Interpretation and Education Skills I and II.

There are five basic categories of operational duties and relevant training needs: (1) Administration; (2) Interpretation and Environmental Education; (3) Visitor Protection and Safety; (4) Natural Resource Management; and (5) Maintenance and Operations. For each category there are three levels of mandate or basis for the training: (1) Legal Mandate (required by law or policy); (2) Enhancement (desired by adopted guidelines); and (3) Professional Development (beneficial to the division and employee for improved effectiveness and efficiency of operations).

The following table shows the levels of mandate for each of the five basic operations categories and should prove useful in a review of training deficiencies. A survey form that can be used with management and staff at Jordan Lake to identify other training needs also follows.

## Training Needs Assessment

OPERATIONS CATEGORY	LEGAL MANDATE	ENHANCEMENT	PROFESSIONAL DEVELOPMENT
Administration		-Supt. conference -Clerk seminars	-Public Manager Prog.
Interpretation & Environmental Education	-EELE teacher workshops	-Interpretive Skills I -Interpretive Skills II -Canoe Leader Certif.	-National/Regional -Interpreters Assoc.
Visitor Protection & Safety	-BLET -ALERT -Bloodborne Pathogens -Safety & Occupational Health Council (SOHC)	-CPR (clerks & seasonals) -First Responder -Park Safety Officer Conference	-Criminal Justice Instructor Certificate -Firearms Instructor -Defensive Tactics Instructor -Armorer
Natural Resource Management		-Resource Mgt. I -Ecological Burning	-Burn Boss Certificate
Maintenance & Operations	-Commercial Drivers License -Water Treatment Operators License -Wastewater Treatment Operators License	-Maintenance Conference	

### Recommendation

Jordan Lake management should use the general training needs assessment to complete an analysis of training deficiencies and use the survey form to identify other training needs. The most critical training should be undertaken first. Priorities for other training needs can then be established using the assessment and survey form. Jordan Lake management should then work with the division volunteer/training coordinator to obtain needed training.

# **SURVEY: TRAINING NEED PROPOSAL**

CATEGORY:  Administration  
 Interpretation and Environmental Education  
 Visitor Protection and Safety  
 Natural Resource Management  
 Maintenance and Operations

Law, policy, or guideline that is basis of mandate: \_\_\_\_\_  
(Attach copy if available.)

**SUBJECT:** \_\_\_\_\_  
\_\_\_\_\_

TRINEES:      Group(s) \_\_\_\_\_  
                  Individual(s) \_\_\_\_\_

SOURCES:       Department (ENR)  
                 Other Agency (list) \_\_\_\_\_  
                 In-house  
                 Commercial Trainers  
                 Community College (list) \_\_\_\_\_  
                 Other (list) \_\_\_\_\_

## **SPRAY FIELD MAINTENANCE**

The Parkers Creek sewer system spray field (approximately 37 acres) and Poplar Point spray field (approximately 26 acres) need immediate pruning and chipping and periodic maintenance thereafter. Typical costs for such pruning and chipping run \$750 to \$1,000 per acre, so using a private contractor would cost approximately \$50,000.

The type of work needed is well-suited for prison labor. Falls Lake State Recreation Area has successfully used inmate labor to clean its spray fields.

### **Recommendations**

Pursue obtaining inmate labor to clear and maintain the Jordan Lake spray fields during the off-season. The park superintendent should summarize the issue and proposed solution in a memorandum to the division director. Once initial clearing has taken place, maintenance clearing every three years should suffice.

## **MOWING AND YARD MAINTENANCE**

A substantial amount of mowing takes place at Jordan Lake. Mowing is needed at campsites, around washhouses and restrooms, at beaches, boat ramps, picnic areas, tot lots, entrance stations, along road sides, and at office, maintenance, and other areas.

Some areas need mowing weekly during the 26-week mowing season, and other areas require less frequent mowing. This mowing has been undertaken in-house to date, using a permanent general utility worker to supervise seasonal workers. Should the mowing continue in-house or should the mowing be contracted?

### **Recommendations**

Continue to do the mowing in-house using seasonal workers. Based on preliminary estimates, it appears that the current method of mowing is cheaper. Contracting is likely to run at least \$200,000 to \$250,000 annually. In-house mowing also allows better control of what is mowed and when.

A thorough analysis of all mowing costs would need to be made, however, before contracting is eliminated as a viable option. The costs of mowing, yard maintenance equipment, and equipment maintenance and repair would need to be calculated and added to park expenses currently made for personnel that mow. Jordan Lake management may explore contracting mowing and yard maintenance in greater depth in an attempt to find the most cost-effective and efficient method of operation.

## **RESPONSE TO OFF-HOUR MAINTENANCE PROBLEMS AND EMERGENCIES**

Jordan has the largest overnight capacity of any unit in the state park system. In addition, 60 percent of the day use occurs on weekends and holidays. With this amount of off-hour use, a maintenance breakdown or emergency causes a major service interruption for a large population of park visitors. The size of the utility system and the physical plant combined with heavy off-hour use greatly increases the probability of a service interruption. Currently, there are no maintenance staff living in the park, and return driving distance varies from 20 to 40 miles. Maintenance staff are expected to, and do, return to work when contacted. Driving time is not the only factor limiting effective response; there is also no system in place to ensure that maintenance staff can be contacted or that they are in a location for reasonable return.

A park residence was suggested as a possible solution to this issue. A comparison of the cost and benefits of a maintenance residence, however, determined that one maintenance mechanic could not be available during all of the off hours when coverage was needed, and that anything less than total coverage would not justify the tremendous expense of residence construction. A rotating pager could be used to improve contact with off-duty maintenance staff, but would not ensure that the pager holder was in a location for reasonable return. An official on-call status as provided for in the State Personnel Manual, Section 7, page 50.1, would require designated maintenance employees to be available and return to work when contacted via pager, but the on-call designation does restrict the employee's freedom during off-duty hours and requires compensation as provided for in the on-call policy. The cost of an on-call designation must be analyzed against the benefit based on current need. A detailed record on the frequency of call-backs and the cost of down time in relation to these call-backs does not currently exist.

### **Recommendations**

- The park should continue the current practice of call-back for maintenance staff who can be reached. Employees who can be reached and can reasonably return will be compensated according to the emergency call-back policy.
- When maintenance employees cannot be reached or cannot reasonably return, commercial maintenance providers should be used.
- A pager system should be put in place on a trial basis to improve communications with off-duty maintenance staff.
- The Jordan maintenance supervisor should maintain a detailed log of the number of call-backs, the response time, and the cost and impact of any delay for a period of one year or more. At such time that a review of the call-back record determines that a significant savings could be achieved, an on-call policy could be recommended by the park superintendent.

## **CAMPER REGISTRATION SYSTEM**

Campers currently register, pay their fee, and then go pick out a vacant campsite on a first-come, first-served basis. Campers are not assigned sites. With the large number of campers, registration, and tracking has become a major problem for operations staff. With the current system, it is difficult and time-consuming to keep track of who and where the visitors are. Campers often plan to meet at the campground, so there is no easy way for them to know where their fellow campers are located. In cases of emergency, finding a particular camper is difficult.

### **Recommendation**

A better camper registration system is needed. In order to reduce the amount of time needed to record and transmit camper information to the entrance station, a computer notepad unit will be used on a trial basis at Poplar Point Campground. Such a unit can document in handwritten format needed camper information and download such information into a computer. A printout of the camper information can then be readily produced. Once a new system is determined to be satisfactory, it will be expanded to other areas where needed.

## **JANITORIAL SERVICES**

Jordan Lake State Recreation Area's visitation now exceeds 1.3 million annually. Monthly visitation can exceed 200,000, and over 80,000 people camped in 1995. This high level of day use and overnight camping results in high demand for cleaning of operational areas and facilities. Restrooms must be cleaned, trash cans emptied, and supplies provided.

These duties are currently performed mainly by seasonal staff, but with increasing visitation, the permanent ranger staff is too often needed to assist, pulling the rangers from their primary duties. Seasonal workers also require hiring, training, and supervision. The bulk of this work and staff time is, of course, needed at the peak visitor season.

Contracting of the janitorial duties may offer a preferred alternative. Janitorial duties and the hiring, training, and supervision would then fall primarily upon the contractor, thus freeing permanent ranger staff for other duties. Funds currently expended for seasonal workers could be used for contracting.

### **Recommendations**

In order to have experience upon which to make a sound decision concerning the best method of providing janitorial services, contracting will be undertaken on a trial basis. The bulk of janitorial work will continue in-house, but during the 1997 visitor season, janitorial services at Poplar Point will be contracted on a trial basis. Further expansion of the contracting of janitorial services will be based upon the pilot project's success. If contracting becomes permanent, some of the cost would be offset by hiring fewer seasonal workers.

## **EXPAND AND IMPROVE TRAILS**

More trails are needed at Jordan Lake, and the existing trails need some improvements. There are trails at Vista Point, Parkers Creek, Poplar Point, Crosswinds, Ebenezer Church, Seaforth, and New Hope. These need ongoing funds budgeted for maintenance and signs. Trails in wet areas will need more funds budgeted because of boardwalks.

There is also a need to create an accessible trail for mobility-impaired park visitors and for visitors with other disabilities. A good location for such a trail is the Jordan Lake administrative area off Highway 64. The area has a varied selection of habitats within limited grade changes. Another possible area for such a trail is Parkers Creek.

There is also demand for bicycle and equestrian trails. At this time, none of the park sections are large enough, especially with the existing camping use, to incorporate bike or horse trails, according to trail guideline minimums. The Division will need a memorandum of understanding with the Wildlife Resources Commission (WRC) to construct a long trail crossing Division and WRC interim game lands if bicycle or equestrian trails are to be provided. There is a future possibility of connecting such a trail to the American Tobacco Trail, a 23-mile proposed rail-to-trail conversion project along an inactive stretch of Norfolk-Southern rail line.

### **Recommendations**

Create a capital improvements project to construct an accessible trail for visitors with disabilities near the park administration building south of U.S. 64. The project will include parking, trail signs and interpretive exhibits. The project should also include improvements to existing trails, including boardwalk sections needed for wet areas.

Adequately budget for ongoing trails maintenance.

Although the WRC has not expressed interest in trail use on interim game lands, the division should continue to pursue the establishment of bicycle and equestrian trail and possible linking with other area trails.

## **INCREASES NEEDED IN SEASONAL STAFF WAGES**

Seasonal staff wages are low and hinder the hiring and retention of seasonal help. This is particularly true for lifeguards, who often leave for higher paying and less demanding employment at area pools. Additional funds for seasonal staff wages are needed, and additional funds may become available if fees for park entry, camping, and shelter rental are increased.

### **Recommendation**

Seasonal staff wages need to be increased. Wages should be increased 15 percent or more to make them competitive with comparable jobs in the area. Additional revenue received from park entrance and facility user fees should be used for such purposes.

## **ADDITIONAL RANGER NEEDED AT PARKER'S CREEK**

Parkers Creek recreation area and campground has four tent and trailer camping loops with 250 sites and one six-site group camping area. The day-use area includes picnic shelters and picnic sites, a multi-purpose court, and swimming beach. A boat ramp is also provided. An additional ranger is needed for public safety, operations, and interpretation and education activities.

### **Recommendation**

Jordan Lake management should attempt to obtain approval for an additional ranger to be used primarily at Parker's Creek.

## **REFRESHMENT STAND OPERATIONS AT BEACHES**

Jordan Lake State Recreation Area's visitation now exceeds 1.3 million. The majority of these day-use visitors will bring food, beverages, and other supplies with them. Many people, however, neglect or forget to bring items. As a service to visitors, some type of concession/refreshment stand or mobile truck is desirable. Because of crowding, if a visitor leaves the park to run to a store, he or she may not be able to be readmitted or may not find another convenient parking space. Long traffic lines may also delay readmission.

### **Recommendations**

There is a need to provide visitors with a convenient way to purchase food, beverages, and limited supplies. While such services would compete with local stores, it is often too difficult and time-consuming to leave the park and return. Therefore, the Division should investigate the best way to provide these services at Jordan lake. At the same time, the need and provision of concessions at Falls Lake should be considered. The Division of Services for the Blind will need to be consulted.

## **OBSERVATION DECKS**

Observation decks are needed at Parker's Creek and at Seaforth for sightseeing, wildlife observation, and interpretation and education. The decks will also provide much needed areas for people with disabilities.

### **Recommendation**

The decks should be constructed. A capital improvement project to construct decks at Seaforth and Parkers Creek is included in Chapter VII.

## **CROSSWINDS MARINA EXPANSION**

As new recreational facilities at Jordan Lake have been added and the lake's popularity as a recreation area has increased, business at the Crosswinds Marina has also grown. The marina may need to be modified or expanded at some point in the future to meet increased demand.

### **Recommendation**

At the appropriate future time, the Division of Parks and Recreation should review the existing lease, talk to the leasee, and study the public demand for marina services to develop a long-range plan for the marina and its services.



